GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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TO HELP get wax out clean, it is advised in *Leipz. Bztg.* to stir into the melted mass some cut straw, then press.

BUCKWHEAT, says F. Greiner, in *American Bee-keeper*, yields abundantly on the hilly portions, but very poorly on the flats.

TAKES ME BACK a quarter of a century to hear A. I. Root talking enthusiastically again about bees. Keep it up, Bro. Root; but kind o' careful like, so it'll last.

CAMPHOR will drive ants away from hives.—*Ill. Monatsblaetter.* [Might it not also drive away the bees? What is offensive to one would be likely to be offensive to the other.—ED.]

R. F. HOLTERMANN says, page 285, "No starter needs to be used with" Weed foundation. What under the sun does he mean? [I give it up. This may have been a misprint that I overlooked.—ED.]

THE EXPERIENCE of C. F. Bender, p. 290, confirms the view that, wherever bees have an equal choice between old comb and foundation or new comb, they always prefer the old, whether for honey or brood.

SPEAKING of sleeping upstairs in Cuba, p. 295, it is well known in the medical fraternity that in malarial regions those sleeping downstairs may be badly shaken with the ague while those sleeping upstairs are exempt.

SYLVIAC, in *Le Rucher Belge*, says that from observations in different parts of France, and in Texas, he learns that during harvest there is a nightly loss of one-fourth of the daily income of a colony. [France and Texas! That is a rather queer combination for Frenchmen to talk about.—ED.]

I'VE HAD BEES crawl up my trousers leg, and it's any thing but comfortable; but, my! C. E. Woodward must have baggy trowsers to allow a parrot to climb up his trousers leg. Come to think of it, may be the parrot climbed up outside.

FRIEND DOOLITTLE says, p. 278, pasture alsike till two weeks before the time you want it to bloom. Others say, mow it before blossoms are formed. I wonder which is better. I suspect the pasturing might be worked later than the mowing.

YES, MR. EDITOR, I own up that I had the wrong idea in my head when I said I didn't see how you could easily get a group of five hives into a straight row. I supposed you meant a group like the S. E. Miller group in the A B C book. I hardly suppose you would advocate having a group of five close together in a straight row.

W. FITZKY, the industrious gleaner of *Centralblatt*, mentioning Ferry's dog reported in GLEANINGS, says they may have not only long-tongued bees from this country, but as the latest specialty "swarm-announcing American dogs. [Our German correspondent might get prices on these dogs in dozens and hundreds lots. He evidently implies that they are quite numerous. The Root Co. will buy up 100 or so if they are obtainable. I have no doubt we could obtain a good market for animals that would watch bees and sound the alarm when they swarm.—ED.]

R. C. AIKIN has succeeded in making me swallow his "bologna sausage" and then "look pleasant," but I can't swallow (without gagging) his definition of "swarm" as merely a "congregation of bees," p. 286. Strictly speaking, I doubt there ever being any swarm without swarming, although by courtesy the term may be applied to an imitation. And I hardly see why he objects to the imitation being called "artificial," for the word "artificial" has, for its first meaning, "produced by art rather than by nature." But if he comes back at me too hard, I'm ready to crawfish; for one of the things I never expect to master is the English language.

"I SECOND heartily A. I. Root, p. 293, in his "protest against this fashion of dropping down with a lot of hives close to a successful bee-keeper." And I suppose there was a time when protest was made against dropping down with a bunch of cattle close beside a successful cattle-raiser. But the moral protest didn't work, and the man had to get legal protection for a certain territory. I once got a hornet's nest about my ears for saying that bee-keepers needed the same protection as cattle-raisers or farmers. I was right, but there's such a thing as getting too far ahead of your times.

AGAINST ROBBERS, *Ungar. Biene* recommends a veil of mosquito-netting hung over the entrance. The robbers will settle on the netting, vainly trying to enter, while those inside will force their way out elsewhere. But if they're as persistent as robbers are in this locality, I'm afraid they would keep right on trying to get in. [Mosquito-netting will not work with our bees. We have tried it hundreds of times. Wet grass or weeds thrown over the entrance are about as good as any thing I know of. A little carbolic acid in the water that is used to wet down the grass will make the robbers hover around at a distance.—ED.]

A CORRESPONDENT wants a dozen improved Miller queen-cages, and asks for a price list. I've no price list, and don't sell supplies. The old-style Miller cages may be found on old supply lists, but not the improved as described on p. 246 of "Forty Years Among the Bees." Possibly others may not think these an improvement. I sent one to Editor Root two or three years ago; and as he never said any thing about it I suppose he thought the old was better. [Yes, such a cage was sent, but I did not like it as well as the old one. The latter has some features for the general trade that the new one does not possess.—ED.]

WHO WOULD have thought of "Somnambulist" rubbing his eyes open long enough to side with the editor against me? To my suggestion of outdoor work he says in *Progressive Bee-keeper:* "Nothing like it, doctor; but the prescription is not convenient for all, and field work needs some variation about it to give the best results, otherwise the same set of muscles gets all the culture, while others, as much or more in need, languish for want of being used. The proof of the pudding is in the eating. If you doubt the exhilarating effects of physical culture, just try it once for a short time. When one is already tired out it seems unreasonable to expect additional exercise to prove restful. Such is, however, the case."

"I SUPPOSE they destroy the fertile worker at once," says B. Coman, p. 290. Some beginner, on reading that, will understand that there is only one laying worker instead of a whole lot, if not most of the bees in the colony. Better make the correction in a footnote, Mr. Editor, every time any thing of that kind is said. If you haven't room for so many footnotes, then "cut it out." [While I can readily believe there are generally more than one fertile worker, yet how do we *know* or how can we know that there is only one in all cases? Is it not probable that there is only one laying worker in a hive sometimes? If it has been definitely proven that there is more than one fertile worker in a hive in *every* instance, I have not seen the proof. On the other hand, has it not been stated that the fertile worker was caught in the act, killed, and that thereafter the promiscuous egg-laying ceased? It seems to me such evidence was presented some years ago.—ED.]

I WONDER if M. W. Murphy didn't misunderstand that nurseryman who told him that pears grafted or budded on seedlings never blight. At one time I raised seedling pears by the thousand; and when they were budded I had hundreds of them to blight. I think he will find that nearly all, and I'm not sure but all except the one original tree, of any named variety are budded or grafted on seedlings. [Our readers may not know that Dr. Miller, years ago, embarked in the fruit business quite extensively. The younger bee-keepers may be surprised to know he has a good many acres of fruit on his place. The care of it is in the hands of his hired man or a brother-in-law, while the doctor devotes himself to his bees. It is, therefore, to be presumed that the doctor, when he talks about pear-blight, is speaking from personal observation and experience; but we are glad, "allee samee," that he got switched off from the pear business to the bees.—ED.]

A. I. ROOT says, p. 295, C. E. Woodward very much prefers Hoffman frames so as to have automatic spacing, while Moe, Hochstein, Howe, and perhaps all the bee-men west of Havana, will not have a Hoffman frame on the premises, and asks, "What are you going to do about it?" I'll tell you what I'd do, Bro. Root; I'd advise them to use Miller frames. Then they'd have all the advantage of automatic spacing without the intolerable nuisance of the bee-glue, which is almost certainly the reason the Hoffmans are disliked. [I do not know about Mr. Hochstein nor Mr. Moe; but Mr. Howe did not like Hoffman frames when he was working with Coggshall in New York; indeed, the latter started with unspaced frames. I always felt that if Mr. Coggshall had commenced with Hoffman frames he would have preferred them to any thing else; but it might surprise you to find how many would not like your style of frames. We tried to introduce metal-spaced frames in certain parts of Cuba, but they would not take.—ED.]

REFERRING to that 75 cts. business, p. 276, you say I'm introducing a new condition. Sure; and a new frame. But the question remains a fair one: Will the shallow frame with feeding after the harvest clean up any more than H. R. Boardman will with the deeper frame and feeding the same amount

before harvest? [I do not know. But how is this question, with its new conditions, related to the former question? to which I referred on page 244, Feeding *before* the honey-flow as practiced by Mr. Boardman is a very different procedure, and for a *different purpose*, from feeding *after* the honey-flow, as it is sometimes practiced by the Danzyites. In the case of the former, even if the colonies are strong they are fed to crowd the brood-nest with stores so that all new honey will go above In the case of the latter, the depth of the brood-frames takes care of the matter automatically to some extent so that, whether the apiarist is negligent or too busy, the honey when it does come in will be forced above. When syrup is given *after* the honey flow, it may be given in one large feederful at one dose, and taken down in a night. It is then designed simply to give the bees winter stores just before they go into winter quarters. There is no idea of stimulation about it. Mr. Boardman designs to *stimulate* as well as to crowd the brood-nest. If the questions are to be linked together at all, the same procedure before and after should be given to each kind of hive.—ED.]

"HONEY may be shipped by express when the distance is short and the weight light," quoth ye editor, page 275. I used to think that, but experience taught me differently. It is true that you can send a small amount a short distance by express as cheaply as by freight, and in less time. But the cost is not the chief objection: it's the rough handling, at loading and unloading, and it will be the same for a long distance as for a short, unless there is a change of roads. Also it will be worse for a light than for a heavy weight, for express men just throw things. Experience tells me it would be risky to send 5 lbs. of comb honey 5 miles by express. [Your experience has been a good deal like that of others, and ours too—that a small shipment of comb honey sent by express is liable to be smashed or damaged. The rate from here to Cleveland is 40 cents on 100 lbs. Suppose I wish to send 200 lbs. of honey, it costs only 80 cts; then if it were crated, the handles sticking out at each end, the honey *should* be (but it is not always) carried without breaking. A light fragile package weighing 10 or 15 lbs., that can be thrown like a brick, is liable to be damaged. It often happens that for a short distance 200 or 300 lbs. can be sent cheaper than by freight. When it is sent by express it is *delivered to the consignee*. When sent by freight there is a cartage item of at least 50 cts., to say nothing of the delay and the freight itself. For a distance of 25 to 50 miles, the express will often be cheaper than freight. Let us take an example: The freight and cartage on 100 lbs. of comb honey to Cleveland would be 75 cts. The express on this same weight (including cartage) would be only 40 cts., and the goods would be delivered in three or four hours. On 200 lbs. to the same point the cost would be slightly in favor of freight, or 75 cts. as against 80 cts. by express. On 300 lbs. the ratio would be 86 cts. and $1.20 respectively. But having said all this, I suspect the average shipment of less than 200 lbs. had better go by freight; for, as you say, comb honey by express is quite liable to be broken because the goods are shoved in and out of the express cars in a hurry, slam-bang ker-bump ker-smash fashion. The messengers and agents have to hustle, for the conductor stands with hand raised, ready to give the signal for the starting of the train.—ED.]

Darkened days—drizzle, rain,
Fog, and steamy air;
Muddy roads, no glimpse of sun—
April everywhere.

AMERICAN BEE JOURNAL.

Concerning honey as a staple article of food, Mr. Hasty well says:

Oranges and lemons are luxuries, but somehow the people will have them. Honey is a luxury, and most people consent to go without very easily, if the article is not handy. This queer and ugly fact should be figured on in decidi g as to the possibility of a Honey Exchange. Also, this related fact that higher prices are not nearly so much needed as the cultivation of the market clear from the bottom. Doubt whether the proposed Exchange will cultivate or do the opposite thing. A stream is not expected to rise higher than its fountain; and an organization formed of those who extract their honey before it is really ripe will hardly refuse to handle unripe honey.

If there is any one thing that ought to be proclaimed on the housetop it is the following, from J. M. Young:

Every bee-keeper should have a small stamp, then stamp all his stationery and every thing he sends out by mail. On every bit of matter sent through the mail, put your name and address, for it will save your customers, and people who do business with you, a world of trouble. Again, it prevents mistakes in many instances. I put my name and address on every section I use on the hives, or that the honey is built in, and I also use it on every box I send out by express or freight. The latter stamp, of course, must be a larger one, for shipping by freight or express.

As stamps are so cheap now, there is no reason for any man, who writes letters, to go without one of these conveniences. Many who write for the press sign their names in such a way as to be entirely illegible, and their address the same often omitting one or the other, which they would not have done if a stamp had been handy. "G. C. Greiner, Producer of Pure Honey, La Salle, N. Y.," has our thanks for stamping every sheet he sends us. Of course, a typewriter answers the same end.

Should the name of the producer of a given quantity of honey be retained on the

package till said honey reaches the consumer? This question is now being discussed with more vigor than usual. Mr. Alma Olson takes the position that his name should be allowed to stand on his honey packages, and says:

If the dealer were to erase my name and substitute his own he would be robbing me of my just dues; and if that is not illegal it ought to be punishable. But there is an unwritten law governing these things. I am not in the mood, neither do I have the inclination, to make a reputation for Mr. A's or Mr. B's honey; neither do I care to build up the reputation of all the honey produced in Idaho by painstaking care. And there is a natural law of compensation which rewards each individual for his greater efforts.

Mr. York replies:

We never say on our labels that *we* are *the producers* of the honey we sell. We have spent hundreds of dollars in creating a demand for "York's Honey," and not for Olson's or that produced by Jones. Their whole crops would be but as a "drop in the bucket" compared to what we sell during a season. We stand back of all the honey that goes out as "York's Honey," and know nothing of Olson's or Nelson's or Miller's honey, and care nothing about their honey. We are not working to sell their honey, unless we buy it, when it becomes "York's Honey," like any other good honey we buy. After it passes out of their hands they have nothing further to do with it, having received their pay for it. When you sell your wheat or oats to a dealer do you insist on having your name on the bags holding the wheat or oats? Well, hardly!

It "hardly" seems to me that Mr. York's reasoning is correct. Suppose all wheat is sold in bags, and that there is a great demand for the Olson wheat. He says that none is to be regarded as genuine unless sold in bags labeled with his card. If the York brand sells for 10 cents a bushel more than the Olson, would it be fair to say Olson wheat is York wheat simply because Mr. York bought it? Doesn't the name before the article mean the producer rather than the handler? In the long run it probably makes but little difference, however, as the consumer knows but little about the producer except in rare instances.

However, this argument all depends on whether comb or extracted honey is meant. If Mr. York has a uniform brand of blended extracted honeys, he has a perfect right to sell it as such; and then, of course, the identity of each separate brand would be lost, label and all. But if a certain brand is in great demand in Chicago, the producer would probably not find it necessary to send it there, as he could sell it at home, where he is known.

Just as the above was written, the foreman asked me where to put the following. As it comes in so pat here, I am glad to make room for it:

I hand you herewith the following resolution:

"*Resolved*, That this, the New York State Association of Bee-keepers' Societies, in convention assembled at Syracuse, March 10, 1903, recommend and urge the bee-keepers to place their name and address upon the packages containing their honey, both comb and extracted, and that this resolution be forwarded to the bee journals for publication."

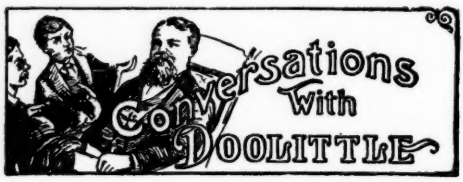
Romulus, N. Y. C. B. HOWARD, Sec.

ROCKY MOUNTAIN BEE JOURNAL.

The above has just closed its third year. Unlike some of the newer publications it gives evidence of stability and usefulness. Indeed, it has already proven a power for good in Colorado. It well deserves every success.

The Colorado Experiment Station, as we have already announced, has decided that the best time to cut alfalfa is at the period of full bloom. In commenting on this, Editor Morehouse says:

If this view of the matter is accepted by our farmers, there need be no fear that the bee industry will ever become extinct in Colorado, through the tendency to cut alfalfa before it blooms. In fact, extreme early cutting is not practiced to such an extent as some would have us believe; and with such good wholesome advice as the above from our agricultural-college professors, we expect to see it lessened in the future.



"Well, Doolittle, how are you this morning?"

"Rather better of my rheumatism than I have been for a week back. How is Mr. Smith?"

"I am pretty well to-day, thank you. I want you to tell me something about increasing bees. Will you do it?"

"What! you got bees?"

"Yes. I have purchased five colonies, and wish to increase them to ten or more. Is there any way of multiplying colonies, except by swarming, as the bees conduct this, for increase?"

"Why do you wish any other way than natural swarming? The bees know how to increase themselves rather better than any beginner can do it, if not better than is in the power of the veteran."

"I must be from home from half-past seven to half-past five each day, except Sundays; and if there is any way to multiply my colonies other than by natural swarming it would be much more convenient for me. Please tell me something about this matter."

"I think I can give you no better advice than to purchase some good book on apiculture before undertaking artificial increase; for in most of them the subject is discussed quite extensively, and to greater extent than would come in the space allotted to this department."

"I will do this; but can you not at this time give me in brief some of the principles governing artificial or forced increase of colonies?"

"Artificial swarming is based on the following facts: First, a queen and some workers, a thousand or more, constitute a swarm or colony of bees, capable of carrying on all the labors of the hive."

"But, aren't drones necessary as well?"

"Necessity for drones comes only in case of young unfertile queens. The second fact is, that worker bees, without a queen, can rear queen if they are furnished with a comb containing eggs or larvæ under three days old. Third, a part of the bees of any colony, unless too small, may be taken from the hive or colony, with or without the queen, without disorganizing any of the others."

"Don't you take a part of the combs from the old colony in making new swarms?"

"You can, or you need not, just as suits you best; and this brings me to the fourth fact, which is, that a part or all of the combs may be taken, with their contents, from a colony of bees without destroying them, as they will immediately go to work to replace it, if fed, when honey is not coming in from the fields. Then fifth, and lastly, queens can be reared in any desirable number by taking the queen away from any populous colony, according to the number; and, when nearly mature, they can be given to the queenless part of any division made. These facts, while they form the basis for artificial swarming, are subject to many qualifying conditions, and a mere knowledge of them alone would not enable a novice to multiply his colonies to the best advantage."

"How, then, am I to know how to increase my colonies to the best advantage?"

"By getting some book; or, if you can afford it, all of the books on apiculture, and studying them, and, through the knowledge thus gained, and thorough knowledge of the economy of the hive, and the habits and peculiarities of the inmates thereof, coupled with what I have just told you about the five facts, will, with a person of ordinary ability, give success in proportion to the energy and perseverance of the one undertaking the matter."

"Do you think I could succeed?"

"I do not know why you should not, for I judge you have the qualities named; but you will want to go a little slow at first. The greatest and most damaging error that nearly all beginners fall into is an inclination to overdo the matter. After getting started they generally 'swarm' their bees to death, as the multiplying seems so easy during the honey-flow, and they find themselves in possession of a lot of weak colonies, with little stores for winter, when that season arrives, only to drag out a miserable existence for a little while, or die of spring dwindling before settled warm weather arrives. Another error, in the average locality, is almost as bad as the above, which is, putting off the increase of colonies till too late in the season."

"When is the right time to multiply my colonies?"

"No definite time can be given, as very much depends on the season and locality; but it is well to do it as early as you can. In the Northern States it can generally be done with safety from the 10th to the 25th of June, and in the Southern States from one to two months earlier, according to the latitude."

"How can I tell about this matter? Is there nothing definite to go by?"

"The only safe guide is the condition of the colonies to be operated on. The hives should be well filled with brood and bees, and honey coming in from the fields, to have the proper conditions exist. This will often occur from one to three weeks before natural swarming would take place?"

"Why begin so early?"

"Because the majority of us wish to secure as much surplus honey as possible along with the increase. In this way the parent colony, as also a swarm made at that time, will, by the time when honey becomes abundant, be filled with comb and brood, and ready to take advantage of the honey harvest by storing a nice surplus; while, if left till later, each part would have all this work to do at the most important period of the year. Two or three weeks thus saved, frequently amounts to the difference between an excellent yield of honey and not enough to pay expenses."

"Can I make all increase at the same time?"

"This is not usually the case, as many colonies will not come into proper condition for dividing when the more advanced are 'ripe' for the operation, on account of all not coming through the winter in equally good condition, having old or failing queens, etc."

"What shall I do with any weak colonies I may chance to have?"

"Such colonies may be united with others, after destroying old queens; or, if the queen is vigorous, a frame of emerging brood may be given from one of the most prosperous colonies, as soon as the weather becomes warm enough so there is no danger of the brood perishing on account of too few bees to care for it properly."

"How large an increase would you think best to make?"

"That depends on your wants. Having the colonies in proper condition, it is well to decide whether a great increase of bees is desired or a good crop of honey. Both can not well be secured at the same time. If we are satisfied with doubling our colonies, and do that in time, a fairly good yield of honey can be expected in most localities; but a greater increase can not be ventured upon without a great sacrifice of honey, often to the exclusion of the whole crop."

"I thank you very much for the information given, and with the help of some bee-book which I may get I think I shall succeed very well. What would you think of my purchasing the A B C of Bee Culture as that book?"

"It is a good one. In fact, it is the only bee-book that is kept up to date at all times. You will certainly make no mistake in purchasing it now; then when you can do so, get others, which will tend to broaden your mind still further."

ONE who reads the *American Bee-keeper* from time to time can not help feeling impressed with the fact that its editor, Mr. Hill, is a practical bee-keeper himself. He is an adept in swinging the queen's English. I envy him his talent.

HO FOR CALIFORNIA!

I have been informed that the next meeting of the National Bee-keepers' Association will be held in Los Angeles. The National will follow its old custom by following the G. A. R. Low rates have been promised, and the Californians will be able to entertain right royally. Further particulars will be given later.

ENCOURAGING FOR CALIFORNIA.

PROSPECTS for a honey crop this season in California seem just now to be exceptionally good—just the year for holding the next National convention at Los Angeles. Mr. Hubbard writes:

Dear Sir:—We have been having some splendid March rains, and I consider the prospects for honey as bright as the year 1894, which was the best I have experienced in ten years. It is the late rains that count for a honey harvest; and so much of this season's rainfall has been at the best possible time for honey-plants. Orange-blossoms are now beginning to come, and the rains will insure a good flow from the hills, mountains, and plains after they drop.
Riverside, Cal., March 31. G. K. HUBBARD.

S. L. WATKINS, AGAIN.

IN our issue for March 1, we stated that Mr. S. L. Watkins, of Grizzly Flats, Cal., had been obtaining queens from several of the best breeders, ordering them in half-dozen and dozen lots, without paying for them; that his promises were always good, but that the fulfillment of them was very bad. It seems that Mr. Gilstrap, of California, and Mr. Laws, of Texas, were unfortunate enough to lose through him. The following, from another queen-breeder, Mr. F. A. Lockhart, is another case in point, and speaks for itself:

We noticed your editorial about Mr. S. L. Watkins, Grizzly Flats, Col., not paying for queens ordered of queen breeders in different parts of the country, etc. We would add that, during 1901, we sent him ten queens. He made all kinds of good promises, but as yet has failed to keep them. For the past six months he has made no reply to letters.
Caldwell, N. Y. F. A. LOCKHART & Co.

If Mr. Watkins deliberately intends to get something for nothing, the queen-breeders of the country should be warned. If he is really unfortunate, and really can not pay for the queens, then he should make a statement, which statement we will gladly place before our readers; but in either case he has no business to order queens when he is owing for stock already purchased.

A TEASPOONFUL OF HOT PARAFFINE FOR SHIPPING-CASES, VS. A PAPER TRAY.

ON page 159 Dr. W. O. Eastwood, of Whitby, Ontario, Canada, suggested pouring a little stream of hot paraffine (only a teaspoonful) in one corner of a shipping-case, then tilting the case around in such a way that the paraffine would flow along the line of the crack formed by the bottom and the sides and ends of the case. This will be all right if the bottom is of one piece, and even then the dividing crack can be closed in the manner stated, with a little more paraffine. In my footnote I rather discouraged the plan, but the more I have thought the matter over, the more I have concluded it may be practical after all. Dr. Eastwood pronounces it good; and undoubtedly it is good if the manufacturers of bee-supplies would make their shipping-cases perfectly tight, or so they can be made tight when put together.

LIPPIA, OR BERMUDA GRASS—WHICH?

REFERRING to the new honey-plant mentioned in our issue for March 15, Mr. E. J. Wickson, of *Pacific Rural Press*, writes:

Mr. Root:—I apprehend that, in your article on carpet grass, on page 228, March 15, you have confused Bermuda grass with *Lippia*. Your description of what you encountered at Nicolaus fits Bermuda grass exactly, but I apprehend that nobody would have such feelings upon lying down upon a growth of *Lippia*, for that is not grasslike at all, but more like a small-leaved prostrate shrub with small woody stems. *Lippia* may be a good honey-plant, but I have never heard it mentioned in that connection. E. J. WICKSON.
San Francisco, Cal., March 25.

Mr. Wickson is probably in position to know that there is possibly and probably a a confusion in names. I am sure of this: That the carpet grass that I referred to is very springy and spongy under foot. I should be glad to have Mr. J. H. Erich, of Nicolaus, Cal., where I saw the plant, send a sample of the grass or leaves to Mr. Wickson for identification. It would be a joke if we have been talking about two different things.

FOUL BROOD IN THE HUMAN MOUTH (?).

I LEARN through the *American Bee-keeper* that I am credited with saying that the germs of foul brood exist in the human mouth. This interesting piece of "news" comes clear from Ireland. What I did say once was that, in my younger days, when I was studying with the microscope, I used to examine some forms of bacteria as found in the human mouth. "Bacteria" is a general term for microscopic life, some of which is of a disease-breeding character; and the editor of the *Irish Bee Journal* apparently makes me coincide with the notion that foul brood exists in the human mouth, because, forsooth, *Bacillus alvei*, the microbe of foul brood, is one of the bacteria. I found bacteria in my mouth, *ergo* my mouth contained foul-brood germs. The

logic is a little strained. I have never held the opinion that the disease with which we are familiar, and which has made such havoc among our bees, ever resides in any thing but the larval growth of insects. Indeed, it is probably confined to the larvæ of bees exclusively.

TESTING BARRELS AND CANS FOR LEAKS.

EDITOR HILL, of the *American Bee-keeper*, referring to what was recently given in GLEANINGS for testing honey-barrels by blowing air into them, says it is "very unreliable." And then he goes on to say:

A decidedly better way is to place the lips firmly in or against the aperture, draw into the lungs and exhale through the nose all the air possible, by repeated draughts, which necessarily become shorter as the air is pumped out of a tight receptacle. By this means much more power, with less effort, is exerted; and in case of a leak, in testing cans, the inrushing air from outside, while the breath is momentarily held to listen, will reinflate the partly collapsed tin, thereby keeping up a constant crackle and ring as the sides readjust themselves to the original position. In testing barrels, when a leak occurs, and while the bung is yet stopped by the human pump, the hissing of rushing air may be audible; or if the leak be very small, the suction at bung will be gradually reduced, and readily recognized by the pumper.

But Mr. France (and I regard him as one of the most careful and conservative bee-keepers I know of) illustrated at the convention how reliable the pressure plan was with him. He explained that, when a barrel is pumped full of air, the hand should be dipped in water or moistened with saliva, and be held over the hissing place. Bubbles will form at the point of the leak, and all that will be found necessary will be to drive a hoop down at that point until the hissing ceases. But when the process is reversed I can hardly see how the leak could be located so readily. I'll have Bro. Hill show me the trick when I go to Florida.

STOPPING THE MIXING OF SWARMS WITH A BLANKET OR SHEET

As the swarming season will soon be on in many localities, I hasten to place the letter of G. C. Greiner, on this subject, before our readers. It appears that the plan of stopping the swarms as advocated by Mr. McEvoy, in our last issue, page 280, is a new old kink. Mr. Greiner writes:

The reported scheme of retaining or confining an outcoming swarm by means of sheet or blanket is another case of a long-known little kink that is new to many, even to some of the bee-keeping veterans.

More than twenty years ago we used to run to the house after sheets for that purpose, and last summer I stopped a number of swarms in this way. Some times the plan works like a charm; at other t mes it doesn't. Your supposition of bees boiling out from under the sheet is quite correct. In spite of all tucking up and stopping every little opening visible, I have failed many times to stop them. They would come out and find an outlet somewhere, even if they had to crawl through the grass. The trouble is, we are not always ready with the sheet just in time, when they first begin to issue; and it takes but a very few minutes for quite a large portion of the swarm to be in the air. Then if the queen is with them, which she is apt to be, all the sheets of the household will be of no use.

But there is another case, when a sheet will do good service. It sometimes happens that a swarm, instead of alighting somewhere else, takes a notion to enter the hive of another colony, which may mean its own annihilation. A sheet thrown over such a hive will prevent the calamity, and induce the swarm to alight where it is more desirable. G. C. GREINER.

La Salle, N. Y. Apr. 4.

When several swarms are coming out at once, the bee-keeper is put to his wits' end, and will be glad to grasp at a straw; and even if the blanket or sheet plan does not hold the bees in, it may succeed to such an extent as to save him a great deal of annoyance.

PROFITS IN THE HONEY BUSINESS.

ONE of our subscribers would like to know something about the profits of bee-keeping on a moderate scale. He has just been investing in the business, and wishes to know what he may reasonably expect. The question is a hard one to answer, as so much depends on the locality and the man, and the number of bees to the area.

On the average, perhaps, in the Northern States, in what is known as the rain-belt, one might expect to get anywhere from 25 to 50 lbs. of comb honey, and perhaps from 25 to 50 per cent more of extracted. There will be some seasons when he might secure as much as 100 lbs. on an average, and occasional seasons when there would be neither comb nor extracted, and the bees would require to be fed. Taking one year with another, a small bee-keeper ought to average about 35 lbs. of comb honey, on a conservative estimate, providing he has reasonable skill and love for the business. The comb honey might net him, deducting the expense of selling, from 8 to 12 cents; the extracted, from 4 to 7. These figures do not include the labor of producing the honey nor the cost of the fixtures. The cost of the supplies, exclusive of sections and foundation, ought to be sufficient to cover 10 to 20 years if no increase is made. Suppose we put the comb honey at 25 lbs. as the average, and the price secured 10 cents net. The actual money he would get from the commission merchant or grocer might be about $2.50; but out of this he must deduct a certain amount for labor, and 10 per cent on the cost of supplies, to be on the safe side.

With only a few bees the labor would count for nothing, as the work would be performed by some member of the family or by the man of the house, who could, during his spare hours, do a little with bees and work in his garden. In case of one, two, or three hundred the labor item must be figured. The larger the number crowding the available territory the smaller the profit per hive. In other words, a small apiary will always yield larger returns proportionally than the large one. I would not care to go into all the details, as there are so many diverse conditions that might arise that some one might be apt to take my figures and say that they do not fit his locality; but a rough estimate for an apiary and in a locality not overstocked, not including the labor on the $2.50 actually received for honey sold, ought to leave a net profit somewhere about $2.00. This would be on the basis that the locality did not require much feeding in the fall. If feeding was found to be necessary, 50

cents more would have to be deducted, making a net profit of $1.50. On this basis it will be seen that the profit in one season ought to pay for the hives and supers, in one year, or come very close to it, leaving the investment good for ten or more years. If we figure it that way the ten per cent need not be figured in. For a professional man, or one who has other business, even these returns are not bad. Even if he secured only enough for family use, the diversion or change to relieve the tired brain is worth something.

FORMALDEHYDE FOR CURING BLACK BROOD, AS TESTED BY THE INSPECTORS FOR NEW YORK.

Most of our readers know that New York has an excellent foul-brood law, the State being divided up into four districts, one inspector for each district. Charles Stewart, one of the number, seeing what Mr. Weber had to say regarding formaldehyde as a cure for foul brood, in our issue for March 15th, page 228, writes as follows:

I read C. H. W. Weber's report on the use of formaldehyde for the cure of foul brood, with much interest, especially as the bee-inspectors of this State have been experimenting with this powerful disinfectant during the past summer whenever a little time could be spared from State work, in order to determine if it would cure black brood, which, you know, is much more to be dreaded than foul brood.

About thirty tests were made by myself and other careful bee-keepers by treating diseased colonies on the shake-off plan, then using about three tablespoonfuls of formaldehyde to the number of combs we could pack in about 4½ cubic feet of space.

These combs were then given to healthy colonies, and, with an occasional exception which could usually be traced to some outside source of infection, the brood was healthy, the combs being capped regularly over the brood. Some of these combs, before being given to the bees, were the worst cases of black brood we could find, but were, of course, first treated with vapor of formaldehyde.

Later in the season, about twenty colonies of healthy bees were given combs very heavy with honey and pollen, taken from diseased colonies, and vaporized. These colonies were carefully marked, and before long we shall know if we were successsul in killing all the germs when they were located under both pollen and honey It seems almost too good to be true; but, even if it is a failure in this experiment, we expect to give them a longer and stronger dose and try it again.

At first we bought a small vaporizer of A. B. Huested & Co., of Albany, N. Y; but, later, wishing to do business on a larger scale we made a larger one ourselves, and bought a gallon of formaldehyde from the above firm for $3 00.

As a precautionary measure we expect to vaporize all of our extracting-combs this season before giving them to the bees, and feel confident that, in this kind of combs, where but little honey remained from last season, no germs will survive the treatment.

Sammonsville, N. Y. CHAS. STEWART,
New York State Bee-inspector, Third Division.

This is indeed encouraging. As Mr. Stewart well says, black brood is more difficult to eradicate than foul brood. We have now reports from three different sources, of careful experiments, going to show that formaldehyde may prove effective for curing foul brood without destroying either the combs or the brood that still remains healthy.

The method that requires the burning of the combs, and substituting one or more sheets of foundation, is necessarily somewhat expensive; but hitherto it has proven to be the only reliable method for curing either black or foul brood; but the gas or vapor from formaldehyde may be so penetrating and powerful that it enters clear into the combs, killing even the spores; and when we remember that the spores themselves have been exposed to a boiling temperature, in some cases for an hour, with out killing them, the gas must be powerful indeed. I can not help feeling some doubt as to whether *any gas or chemical*, unless so powerfully corrosive as to destroy even the brood, would fail of killing the *spores*. And this leads me to say that so good an authority as Inspector McEvoy, of Ontario, is doubtful about the efficacy of formaldehyde. He even goes so far as to say it does not cure. Let us stand open to conviction, however; for *if* the new germicide will do half what has been claimed for it, it will prove to be a great boon for bee-keepers.

No specific instructions are yet given, just how to apply the spray; but I assume the drug is bought in the liquid form, and that the same is sprayed on combs with any of the atomizers sold by the ordinary drug-houses. Of course, the foul-brood or black-brood inspector would require something a little larger, capable of covering several combs at once, or so powerful as to force the vapor clear up through all the combs while they are in the hive.

I hope that those of our friends who have black brood or foul brood in their apiaries will make tests of the drug, and report to us as soon as they can definitely determine what it will do. It is not sufficient to have the combs remain healthy for 30 days. All *bacilli*, the active principle of the disease, are undoubtedly killed by the drug; but the question will be whether spores that are capable of resisting a boiling temperature for so long a time would be destroyed by such drugs. If these spores subsequently find lodgment in the tissue of the young larvæ, there is a strong probability that black or foul brood will develop, as the case may be.

THE CANDYING OF HONEY; SOME THINGS WE KNOW AND DON'T KNOW ABOUT IT.

IT is generally conceded that honey left in the comb does not candy nearly as readily as that which has been thrown out from the extractor. There is something about the agitation—the coming in contact with a large quantity of air—that causes honey to go into a semi-solid state. It is a well-known fact that honey extracted and fed back, or fed for the purpose of filling out our unfinished sections, has a tendency to granulate more quickly than comb honey which has been filled and completed wholly from the product direct from the fields. Sometimes it is urged as an objection that feeding back is unprofitable because so much comb honey would come back on the producer's hands as so much "sugared comb honey."

A case recently came under my notice that has seemed interesting in connection with the statement already made. A large

shipment of Cuban comb honey went to New York. It was beautiful. It was well flavored, well filled out, white, and the buyer had every reason to suppose it would be a good seller, because it arrived just when the market was a little bare of domestic comb honey. But a few weeks later he was chagrined to find this honey was candying, and he came to the conclusion that *all* Cuban comb honey would candy in like manner. As he was a large buyer, and had promised to take a large amount of such goods, he wrote back to his Cuban customers to "hold off." An investigation revealed the fact that the first lot of Cuban honey that had been received was largely fed-back, and, like all such honey, it should be sold to the consumer at once. Subsequent shipments of comb honey from Cuba, I understand, to this same buyer, have been all right. The Cuban bee-keepers had learned in the meantime it would not pay to feed back to fill out their sections, and accordingly they shipped only that which had been filled from the product direct from the fields.

Quite a number of other facts of like nature have come before us at different times; and while one can at times feed extracted honey to finish out some of his unfinished comb honey, he must make arrangements to have this honey turned over to the consumer as soon as possible. Feeding back does not hurt the flavor in the least; and it is only after the lapse of time that its selling quality is affected, and that almost wholly through the tendency of extracted honey to "leaven the whole mass."

Two or three years ago, when I attended the Colorado State Bee-keepers' Association convention, Prof. W. P. Headden, of the Agricultural College and Experiment Station at Fort Collins, Col., gave an interesting address on candied honey. Among other things, he stated that *agitation* caused honey to candy more quickly than it otherwise would. If I remember correctly, he gave it as his opinion that the reason *comb* honey did not granulate as quickly as extracted was because the latter was subjected to the extracting process—a violent throwing and splashing causing it to come in contact with a great amount of air. There were two or three at the convention who testified that, in order to hasten granulation, they had actually been stirring the honey in addition to putting it in a cool place.

It is another well-known fact that maple-sugar syrup may be brought to a granulated condition much more rapidly if it be stirred during cooling than if it is allowed to stand in a quiet condition. Whether there is any chemical or mechanical relation between the honey and syrup I can not say.

Another fact is that honey subjected to a temperature of 160 or 180 degrees Fahrenheit will remain liquid for perhaps a year or more if it be sealed while hot. What does the heat have to do with it chemically?

Another interesting and well-known fact in connection with this matter is a little peculiar. Here are the sage and alfalfa honey that are produced in the same climate, and within a few miles of each other, or perhaps within a mile itself. One will candy very readily, and the other will remain liquid without any particular treatment for nearly a year or more, in spite of its previous agitation in the process of extracting. What the chemical difference is between the two honeys that should cause this tendency in one to solidify, no scientist has so far ever pointed out.

It is still another well-known fact that extracted alfalfa honey will candy more quickly than perhaps any other honey known. Mr. R. C. Aikin, as our readers may remember, takes advantage of this fact when he allows it to run into paper bags to solidify.

There is a great deal that we do not know about this subject. What we do know can be comprised in a few hundred words. What we do *not* know might fill a large volume. I wish that we might in some way stimulate an inquiry that will lead to a more exact and scientific knowledge whereby we can *hasten* it in one case, or *retard* it in another, just as conditions warrant. I should be glad to hear from any of our subscribers who are in possession of facts that will lead to further light.

GOVERNMENT AID FOR BEE-KEEPERS.

Comments on Mr. W. K. Morrison's Article; Apis Dorsata and Other Races of Bees Considered.

BY FRANK BENTON,
United States Department of Agriculture.

The general tendency of the suggestions under the above heading in the article by Mr. W. K. Morrison, p. 96, Feb. 1, is certainly good; for any discussion of the subject which calls attention to the various lines of work that might be carried out through governmental aid, and which might result beneficially to the bee-keeping industry in general, and add to the prosperity of the country by increasing the revenues from this branch of agriculture, is commendable.

Some things, however, are brought forward in the article in question as though they were there presented for the first time; whereas in every instance the suggestions are such as I have repeatedly recommended, both in addresses before bee-keepers' associations, in various articles which have appeared in the apiarian publications, and

in suggestions which I have annually made in the reports which have gone from the Division of Entomology to the head of the Department of Agriculture, and on which were based the recommendations made by the Department to the Committees on Agriculture in Congress. There are certain points mentioned by Mr. Morrison to which I wish to call attention, as I think they need some further elucidation. He says, regarding *Apis dorsata*, the giant bee of India:

"I believe *Apis dorsata* would be a valuable acquisition; but as it has never been domesticated, and we are practically without information as to its habits, it seems doubtful whether we should ask for government aid for such a scheme. It seems to me it would require the attention of experimenters for several years before any thing tangible would result."

I judge that, when Mr. Morrison wrote this, he had forgotten having written in 1896 (see GLEANINGS, p. 561, Aug. 1, 1896), the following:

"Dr. Alfred Russell Wallace, the friend and co-worker of Darwin, is still alive, and takes great interest in bee-keeping, and is as well posted as most bee-keepers in regard to practical bee-keeping. He is the man who has told us the most about *Apis dorsata*. In fact, we could hardly ask for more than he has told us from time to time."

Let us get from Wallace himself a hint as to what he may know of practical bee management, and also see what he has told us of *Apis dorsata*.

Having here before me a copy of Wallace's work, "The Malay Archipelago," I quote a paragraph from his description of the manner in which a native of the island of Timor secures the wax and honey from *Apis dorsata*. The man had ascended a tree, his face, arms, and legs perfectly bare. "He lay at full length on the limb, and brushed off the remaining bees with his hand, and then, drawing his knife, cut off the comb at one slice close to the tree, and, attaching a thin cord to it, let it down to his companions below. He was all this time enveloped in a crowd of angry bees; and how he bore their stings so coolly, and went on with his work at that giddy height so deliberately, was more than I could understand. The bees were evidently not stupefied by the smoke nor driven far away by it; and it was impossible that the small stream from the torch could protect his whole body when at work. There were three other combs on the same tree, and all were successively taken, and furnished the whole party with a luscious feast of honey and young bees, as well as a valuable lot of wax. After two of the combs had been let down, the bees became rather numerous below, flying about wildly and stinging viciously. Several got about me, and I was soon stung and had to run away, beating them off with my net, and capturing them for specimens. Several of them followed me for at least half a mile, getting into my hair and persecuting me most tenaciously, so that I was more astonished than ever at the immunity of the natives. I am inclined to think that slow and deliberate motion, and no attempt at escape, are perhaps the best safeguards."

Those familiar with bee manipulation scarcely need to read any comments on this, since they will at once see how little knowledge of practical bee manipulation Mr. Wallace possessed at the time he wrote the paragraph.

What Dr. Alfred Russell Wallace told of *Apis dorsata* was that: "It builds huge honey-combs, suspended in the open air from the under side of the lofty branches of the highest trees. These are of a semicircular form, and often three or four feet in diameter." This is all the information in his work of 650 pages on his travels in the East. Doubtless in communications to the Entomological Society of London, and possibly in periodicals, he may have given some further account of these bees, but nothing from the bee-keeper's standpoint.

In my own published articles I have been able to state positively the size, appearance, and something of the qualities of the workers, drones, and queens of this species. I was able to determine that the tongues of the workers of this species are appreciably longer than those of our own honey-bees; also that the combs were not merely three or four feet in diameter, but often reach a length of five feet, and sometimes even six feet; that they are composed of hexagonal cells, twenty to the square inch, the brood-comb being 1½ inches thick, and the upper portion of the comb where honey is stored often six to eight inches in thickness; that no distinctive drone comb is built, but drones are reared in the same-sized cells as the workers; further, that multiple combs are sometimes built; that is, two or three combs side by side, where the attachment permits, contrary to the statements frequently seen in print to the effect that *Apis dorsata* is strictly a unicomb bee. As to their habits, I have been able to state that they are most industrious workers, good honey and wax producers; that they fly with great strength of wing; and that the drones fly in great numbers just at nightfall, even after the flights of the workers have ceased for the day; further, that the sting of *Apis dorsata* is not more painful than that of our honey-bees, nor is the bee any more inclined to sting when brought into frame hives, and that it seems to be quite amenable to the use of smoke. Moreover, the colonies which I placed in frame hives did not desert their combs in the frame hives except under conditions which would have caused any bees to do the same thing—conditions beyond my control, and largely brought about through enforced neglect of the colonies, occasioned by protracted illness.

I was able to determine that the workers of *Apis dorsata* are very tenacious of life; in fact, possess remarkable vitality. The

bees are often found at altitudes of 4000 or 5000 feet, where forests occur, yet seem to withstand this temperature successfully. They are rarely seen in the lower or coast regions. This indicates a certain degree of hardiness.

I should like to call Mr. Morrison's attention also to an article entitled "Apis Dorsata, the Giant Bees of India," published in the *American Bee-keeper* for 1895, pages 81—84.

Mr. Morrison says further (p. 96, GLEANINGS, Feb. 1, 1903): "But why not broaden the subject? Why stick to one bee? *Apis Indica* we *know* can be domesticated, and is not likely to be a nuisance to civilization." One might suppose from his manner of putting this that the idea was original with Mr. Morrison. I wonder if he ever read the following, which may be found in an article over my name in GLEANINGS for June 15, 1892, page 450:

"We may hope to bring to this country *Apis Indica*, a bee smaller than our ordinary honey-bee, but an industrious gatherer, which in quite limited numbers is kept in hives by the natives of India. It might be found that *Apis Indica* would visit only smaller flowers than our bees, and thus, even if kept in the same field, not lessen the yield we obtain from the races already here. It would be no small gain for the apicultural interests of the country if three apiaries could be kept at one point without material interference with one another."

And, again, on p. 12 of my "Manual of Apiculture" (Bulletin No. 1, new series, Division of Entomology, U. S. Dept. of Agriculture), the first and second editions of which were issued in 1891 and the third in 1899, I said of *Apis Indica:* "The common bee of southern Asia is kept in very limited numbers, and with a small degree of profit, in earthen jars and sections of hollow trees in portions of the British and Dutch East Indies. . . . Some 10 or 12 lbs. is the most reported from a single hive. It is quite probable that, if imported into this country, it would do more. These bees would no doubt visit many small flowers not frequented by the hive bees we now have, and whose nectar is, therefore, wasted."

From the above it is evident that we do not need, as Mr. Morrison would have bee-keepers believe, "to domesticate *Apis Indica*," since it is already cultivated in various parts of India, and, as a matter of fact, in the Dutch East Indies as well.

In referring to regions from which valuable bees may possibly be obtained, Mr. Morrison follows up the question of broadening this subject with the suggestion that "Africa has bees in abundance over its whole length and breadth. Are none of these valuable? We do know that bee-keeping is the sole occupation of large tribes of people in that continent." And, again, he says: "The East Indies, Siam, South China, South America, Asiatic Turkey, and other countries all have their little honey-gatherers. It is very likely indeed that some of them are of great merit and worthy of early introduction."

As a comment on the foregoing I would state that we know something of the bees of the whole northern part of Africa, of portions of the western regions of South Africa, and also something of the eastern part of Africa; and these all belong to our species, as now classified, and will interbreed with our honey-bees. Furthermore, there are no indications that any of them are superior to the races or breeds of *Apis mellifera* which we now possess. Of course, it is quite impossible to say that there are not very different bees, perhaps more valuable, and very possibly some which belong to other distinct species of bees than *Apis mellifera*, in the interior of Africa. It is a matter worth investigation; but since there are much more promising fields still open, they should be looked to first.

Before accepting the statement that bee-keeping is the sole occupation of large tribes of people in that continent, I should want some definite proof or good authority.

Of the other regions mentioned, omitting the East Indies, there is comparatively little hope of finding any thing new and valuable which would not be found in India itself. There are some possibilities in Siam and South China, and some of the bees found there are similar to those of India proper. In South America there exists no native species of the genus *Apis*, but only the stingless melipones; and, however valuable these may be in the absence of others, none of them have been found to be superior to our bees or likely to compete with them in any respect. The combs of all resemble in consistency and general structure those of our own bumble-bee, and the irregular clumps of honey-cells are made of a coarse wax mixed with pollen, the whole resembling in color and qualities the brown cells of the bumble-bee. The yield is insignificant, and many species of these bees do not stand any degree of cold such as they would meet in even most of our Southern States, the ordinary temperature of 50 degrees being sufficient to cause them to give up their flight. To investigate the bees of South America before undertaking a thorough study of those in some other portions of the world would be simply absurd. We know all the races existing in Asiatic Turkey and their qualities. Several of them have been cultivated, and it is incredible that any exist there that would excel those we now have from eastern Mediterranean lands.

The best comment, however, on Mr. Morrison's suggestions as to regions from which valuable bees may possibly come is a mere mention of his omissions! Starting with the Caspian Sea and proceeding eastward, there are vast regions about whose bees we know very little — Turkestan, Persia, Afghanistan, Cashmere, India, Eastern Turkestan, Thibet, Upper Burmah, and western China, as well as Mongolia. These are the most promising fields for new and start-

ling varieties and species. Among the Dutch East Indies, Borneo, Celebes, and very likely also the Philippine Islands, there are varieties of *Apis dorsata* or possibly a distinct species recognized by some entomologists as *Apis zonata*, whose workers are said to be even larger than those of *dorsata*. To chase off into the interior of Africa, or, worse still, the interior of South America, after bees that are almost certain to be not superior to those we now have, and in many instances are almost surely known to be inferior, would be folly, when the Asiatic territories named, and others adjacent to them, in which *Apis dorsata* and *Apis Indica* do exist, are not yet explored.

In addition to these, the race of *Apis mellifera* which is found in Dalmatia, bordering on the Adriatic, and the bees from the territory lying between the Black and Caspian Seas, known as the Caucasian race, as well as some of the types, very probably of our species, *Apis mellifera*, which exist in the Himalaya Mountains, should also receive more attention before going on some other "wild-goose" (bee) chase.

I have repeatedly advocated an examination of the honey-producing plants of other countries, and the introduction of any which give evidence that they would be valuable in this country. Since large sums of money are annually expended by the government for the distribution of seeds, plants, and cuttings, I see no reason why, if bee-keepers were to ask for it, they might not have some attention given to plants that would be of particular value in their occupation.

Requests have repeatedly come to the Department of Agriculture for lists of trees suitable for planting in cities and towns. In making up these, all points for and against the respective species are considered. I have frequently arranged given lists with reference to their honey-producing value, and in the final account this was taken into consideration. The opportunities in bee-keeping in connection with rational forestry, and the benefits to both industries through their connection, have not escaped my observation, and I have made frequent mention of them to leading foresters.

Mr. Morrison says: "But before bee-keepers apply for more recognition let them make up their minds what they really want, before presenting an appeal for aid. It would be a very grave mistake to apply without a well-defined program ready, one that would clearly appeal to the practical man. Congressmen are very practical men."

Before proceeding to discuss the particular points involved in the above, allow me to call attention to Mr. Morrison's new inconsistency, in that he says, referring to the importation of *Apis dorsata*, "It seems rather doubtful whether we should ask for government aid for such a scheme." Yet in the very next paragraph, when advocating the thorough investigation of the East Indies, Siam, South China, South America, and Asiatic Turkey and other countries for their honey-bees he says, "This is hardly a field for enterprise, and is just where a kindly government might step in to assist."

Now, as to having a "well-defined program." When a request is presented through the Department of Agriculture for an appropriation, a definite program is rarely laid down, but more frequently the general lines of work are indicated which it is believed would be beneficial to carry out; and when the sum is appropriated the particular work to be undertaken is determined by the officials in charge of the general subject: nor are they hampered in this; so that it would suffice, were a general effort made to secure a definite sum of money for experimental work in bee culture, which could be taken to include the investigation of foreign races of bees and honey-producing plants, should other lines not be deemed more imperative at the time. Instead of being "liable to service in all sorts of wild-cat enterprises," as Mr. Morrison seems to fear, it is more likely that one might be tied down to routine work, all very well in itself, but preventing the accomplishment of enterprises of great importance and value. It is quite certain that any one engaged in experimental work for the government would endeavor to sustain his own reputation by undertaking only legitimate work promising only good results, and would carefully avoid any thing that might be ranked as "wildcat."

Just here I will digress sufficiently to refute the idea which, over Mr. Morrison's name, can be found on p. 554 of GLEANINGS for July 15, 1898, in which he imputes to the late Prof. C. V. Riley the desire of "spending money on the study of wild bees and not on practical aid to the bee-keeping industry." It was Prof. Riley's desire to solve the problem of *Apis dorsata;* and had his way been followed, that enterprise would long ago have been put through. This might not have been done with any special appropriation for apiculture, since, contrary to the statements made in the article cited, there was at that time no special appropriation for apiculture, and the funds which were devoted to this purpose by Dr. Riley were drawn from the general appropriation for the Division of Entomology.

In conclusion, I have but to reiterate what I have frequently said before, that all that is necessary to secure a special appropriation to be expended in the interest of apiculture, in whatever lines may be deemed best by those who are competent to decide the matter, and willing to offer their suggestions freely, is for apiarian societies and great numbers of bee-keepers of the country to make an active effort to influence their members of Congress, and especially the committees on agriculture, to see the justice and importance of devoting a definite and liberal sum to this purpose.

Washington, D. C., March 30.

TEMPERATURE OF BEE-CELLARS.

Subject to Conditions; other Important Factors; Ventilation more Important than Temperature; Keeping up instead of Building up.

BY S. T. PETTIT.

Answering a question through GLEANINGS concerning the proper temperature of bee-cellars, I will say that any one temperature for all bee-cellars, and all conditions of hives and bees in those cellars, will fit just about as well as one size of boot will fit the feet of all men. I believe 45° is about right when the hives have nothing more than a cloth over the tops; but I believe 38 to 42 is better when each hive has a good cushion on it. But there are other conditions, both of cellars and of hives—important factors in good wintering—that must be considered to determine the right temperature for each cellar. I never could pronounce definitely upon the proper temperature of any given cellar without first consulting the bees in that cellar. If they are happy and contented, and manifest it by their silence and dryness, I would note that temperature; and if it has prevailed for some time I would decide that it is about right for that number and condition of the bees in that cellar. But cellars differ so much in construction, material, and conditions of exposure to and protection from bleak winds that it may be necessary in some cellars, in order to continue a good supply of fresh air, to allow the temperature to drop to 36 during cold spells.

To make my point clearly understood, let me suppose a cellar, well built of brick, cement, or stone, and practically air-tight, and well supplied with adjustable ventilators, but a portion of it above ground, and in a pretty cold place. Now, it is clear that, in severe weather, the temperature will drop considerably — may be to 36 or even 35. Well, if the temperature will, in all probability, rise to 38 or 42 in a few days, it is better not to close the ventilators nor to change them very much, for, very likely, if they be closed the bees will soon become restless and more or less noisy, and the temperature will rise, perhaps, to the ideal of perfection in many minds—45; but I can assure you that *temperature at the expense of pure air is a bad trade—a losing move.*

With warm top packing, or without it, I would rather winter at from 35 to 40 than deprive the bees of a continuous supply of good air. Mr. Editor, I am unworthy of recognition as an humble writer if I shrink from expressing my convictions, even if I stand alone. But I say that the remarks of many of the veterans, such as "building-up," "getting the bees ready for the honey harvest," "coaxing the bees into the sections," also of expressed errors in manner of wintering, clearly show that the wintering problem is not yet fully understood and disposed of; indeed, I question if comparatively many yet comprehend the grand possibilities of perfect wintering. It is not enough to say, "My loss is only 4 per cent;" the important question is, "What about the condition of the 96 per cent? Making two out of three, or giving help from the strong to the weak, are perhaps the next best things to perfect wintering; but they lag a long way behind in the race of the season.

Here is one difference. Good strong colonies may be made from brood and bees taken from those likely to swarm too early if nearly all are in perfect condition. The one who can make five good colonies out of four gets a long start ahead of the man who makes two out of three, and yet the spring count may be the same. If bees are so strong when sections are given that they are glad to go up for elbow room, not more than one hive in fifty will fail to go to work; and the closer the sections are to the brood, the more bees will be crowded into them. You see they can't help going to work. Refusing to do so would be doing violence to the nature of bee life. There they are, crowded right against warm, soft, tempting foundation; brood-chamber full, and their sacs so full that their whole bodies are just aching for a place to put it, and more coming in. Talk about building up the bees for the honey harvest! Let us substitute *keeping up* for "building up;" better fall and winter work, and less spring work.

Another thing, poor wintering is responsible for the impaired usefulness and even for the lives of many good queens.

Aylmer W., Ont., Can.

[I am with you in believing that temperature at the expense of pure air is a bad trade. I also agree most heartily with you when you advocate fresh air and lots of it. Indeed, I am not sure your views are not orthodox.—ED.]

EARLY OR LATE CUTTING OF ALFALFA DEPENDENT ON LOCALITY.

The Future of Alfalfa Honey; The Condition not Reassuring to the Bee-keeper in California.

BY W. A. H. GILSTRAP.

You are nearer right on the alfalfa question when you say that it "depends somewhat on locality" than the contestants generally are on this subject. It is mainly a question of locality.

Few questions are settled to suit everybody at the present time, and for various reasons they can not be. But this problem has been really discussed on two lines, and they have been so blended as to cause confusion.

1. Is alfalfa cut earlier than it was several years ago, and therefore oftener in the season?

2. Is it more profitable to cut early than after the plant is more mature?

As regards the first phase, it is easy enough for any one living in an alfalfa country, with two good eyes and a fair memory, to decide. Local conditions have differed for many years in various localities in California, but in many places the tendency is toward early cutting.

Experiment stations should be able to decide such questions right, so farmers could tell exactly what is best; that is what the stations exist for. Experimenters can bring chemistry to bear on the subject, and then prove or disprove the practical application of the conclusions thus obtained by feeding stock and carefully noting results. Then why don't they agree? Different environments naturally bring different results. It would seem strange if the most successful mode of handling alfalfa on rich sandy loam would necessarily be best on a thin limestone soil where the growing season is more than a third shorter. The best hay for horses may not be best for beef stock or milk production. If any one has advocated very early cutting of hay in this valley, when the hay is intended for horse feed, it has never reached my attention. Many claim that alfalfa should be in full bloom for some time to make best feed for beef cattle, and many claim it should not stand so long. But when it comes to dairy stock I do not know a man who has changed from late cutting to early, and then changed back to late cutting. As dairying is rapidly coming to the front, it is revolutionizing the alfalfa business. As farming is usually done on methods which are supposed to give best average results, the alfalfa is all cut young where dairying is the main thing (and it generally is), and little thought is given to the small loss, if any, that is brought about by feeding the "wishy-washy" feed to other stock.

Mr. Aikin has told in a past volume of GLEANINGS that the alfalfa growing near fences, along ditches, etc., is of considerable help to the apiarist in his locality. The same is true here, although some farmers turn cattle in after each cutting to graze these nooks down. Some honey is secured before each cutting on nearly any ranch, although the amount may be quite small. In practice, the mower does not always do its work as quickly as in theory it should, owing to miscalculation or rush of work. I think this occurs oftener with small farmers, as they are less methodical about their work, just as a large department store is managed on stricter business principles than a country grocery.

It is as safe to expect alfalfa honey in the future as it is to calculate on sage or white clover honey. Very likely there will be a decrease in the amount during the next decade when our entire country is considered. Of course, the acreage of alfalfa is expected to increase as well as some unoccupied territory to be occupied.

If an apiarist contemplates going to an alfalfa country it would be well to investigate this very important point before locating. If he is located, and finds early cutting is greatly reducing his crop it may be wise to move his bees out of the country, as the most extensive bee-keeper in this county (Stanislaus) and some others did last year.

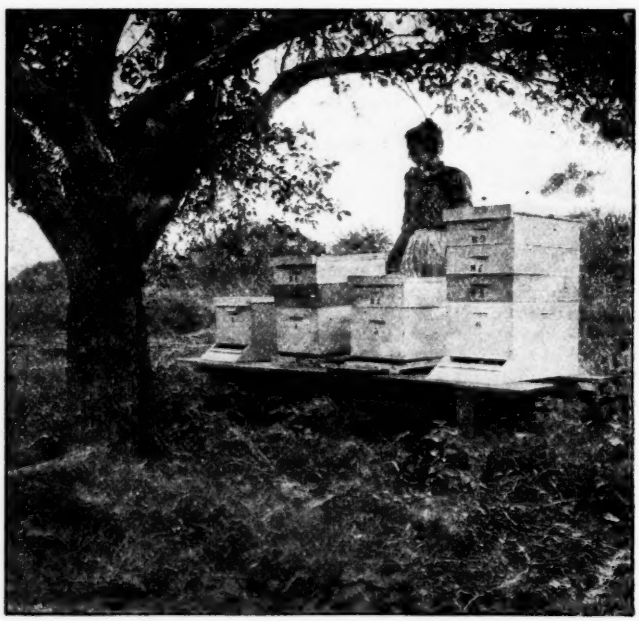
I think that is about all there is of the subject—largely locality.

Modesto, Cal., Feb. 18.

LATE CUTTING OF ALFALFA.

I inclose a clipping from the *Kansas Farmer*, of Dec. 18, on early and late cutting of alfalfa. Although the writer of the article is not writing from the bee-keeper's standpoint, his experience would seem to be pretty good evidence in favor of allowing the alfalfa to bloom long enough before cutting to give the bees a chance to gather a good deal of honey from it.

Editor Kansas Farmer:—My experience in cutting alfalfa is different from some others'. For instance, most if not all the writers on the subject say, cut the first crop early, when one-tenth of the plants are in



A PART OF E. S. WEBSTER'S APIARY.

bloom, and the succeeding crops will be much heavier than if the first crop is allowed to stand until it is all in bloom. I have just read Bulletin No. 114, issued from the experiment station at Manhattan, and it says, "Alfalfa should be cut when not more than one-tenth of the plants are in bloom. Early cutting invigorates the plant. The late cutting of the first crop seems to injure the plant more than at any other time." In September, 1901, I planted six acres to alfalfa and got a splendid stand. In the last week of May, 1902, I concluded that one-tenth of the plants were in bloom, and the crop was ready for cutting, and I cut ten swaths around the field. It set in so rainy and cloudy that I stopped the mower and waited two weeks for fairer weather, lamenting all the time that I was injuring the hay crop by letting it stand so long without cutting. But I was surprised, when I came to cut the second crop, to find that the piece that I cut earlier did not turn off more than about one-half as much as the piece I cut later; and this was the case with the third and fourth cuttings. All through the season I could distinguish the very line where the earlier cutting left off and the later cutting commenced. The ground and soil are all the same, rich bottom, about thirty feet above permanent water, no weeds foxtail, or crab grass in the field. The hay from the earlier cutting did not remain on the field to injure growth of second crop. Please explain to me why my alfalfa acts so contrary.

Garnet, Anderson Co., Kan. J. M. CRAIG.

I also inclose a photo of part of my apiary—four hives, with my wife standing behind them; the other two hives are on another stand which doesn't show in the picture. E. S. WEBSTER.

Hutchinson, Kan.

FOUL-BROOD LEGISLATION IN CALIFORNIA.

BY J. M. HAMBAUGH.

Among the very first bills introduced into the California legislature in January was one with the following title:

An Act—To amend an act entitled an act to promote the apicultural interests of the State of California by providing county inspectors of apiaries, and defining their duties, and providing for their compensation, and repealing an act entitled, "An act to authorize the board of supervisors of the several counties of this State to appoint inspectors of apiaries, and provide for their compensation, and defining their duties, and for the further protection of bee culture," approved March 13, 1883, said first-named act having been approved February, 20, 1901, and adding five new sections, seven, eight, nine, ten, and eleven, and providing for making the violation of certain sections thereof a misdemeanor.

Senator Ward and Assemblyman Burgess, both of San Diego Co., introduced the bill simultaneously in both houses, and they made rapid headway, reaching the Governor among the very first, to claim his signature. All honor to them, and thanks to all in our legislative halls who so generously contributed to the needs of the suffering bee-keepers, with their influence and votes. Many thanks, also, to those wide-awake officers and members of the California State Bee-keepers' Association, University Farmers' Club Institute, California Central Bee-keepers, etc., and especially our good friend Prof. Cook, who so ably and generously championed the cause of the bee-keepers, and while, in our individual estimation, it does not meet every requirement, we believe we now have upon our statutes the best foul-brood law on the continent of America. It will be noticed the last five sections and the amendment to the fourth section were enacted at this session of the legislature.

SEC. 1.—Whenever a petition is presented to the board of supervisors of any county, signed by ten or more persons, each of whom is a property-holder, resident of the county, and possessor of an apiary or place where bees are kept, stating that certain or all apiaries within the county were affected with the disease known as foul brood, or any other disease which is infectious or contagious in its nature, and injurious to the bees, their eggs, or larvæ, and praying that an inspector be appointed by them, whose duty it shall be to supervise the treatment of said bees and apiaries as herein provided, the board of supervisors shall, within twenty days thereafter, appoint a suitable person, who shall be a skilled bee-keeper, inspector of apiaries. Upon petition of ten persons, each of whom is a resident property-holder, and possessor of an apiary, the board of supervisors may remove said inspector for cause after a hearing of the petition.

SEC. 2.—It shall be the duty of the inspector in each county to cause an inspection to be made, when he deems it necessary, of any or every apiary or other place within his jurisdiction in which bees are kept; and, if found infected with foul brood, or any other infectious or contagious disease injurious to the bees, or their eggs or larvæ, he shall notify the owner or owners, person or persons, in charge, or in possession of said apiaries or places where bees are kept, that the same are infected with foul brood or any other disease infectious or contagious in its nature, and injurious to bees, their eggs, or larvæ, and he shall require such person or persons to eradicate and remove such disease or cause of contagion, within a certain time to be specified.

Said notice may be served upon the person or persons or either of them, owning or having charge or having possession of such infected apiaries or places where bees are kept, by any inspector, or by any person deputized by the said inspector for that purpose, or they may be served in the same manner as a summons in a civil action Any and all such apiaries, or places where bees are kept, found infected with foul brood or any other infectious or contagious disease, are hereby adjudged and declared to be a public nuisance; and whenever any such nuisance shall exist at any place within his jurisdiction, or on the property of any non-resident or on any property the owner or owners of which can not be found by the inspector after diligent search, within the county or upon the property of any owner or owners, upon whom notice aforesaid has been served, and who shall refuse or neglect to abate the same within the time specified, it shall be the duty of the inspector to abate the nuisance—either by treating the disease or by destroying the infected hives, together with their combs and bees therein.

The expense thereof shall be a county charge, and the board of supervisors shall allow and pay the same out of the general fund of the county.

SEC. 3.—It shall be the duty of the county inspector of apiaries to keep a record of his official acts and doings, and make a monthly report thereof to the board of supervisors; and the board of supervisors may withhold warrants for salary of said inspector until such time as said report is made.

SEC. 4.—The salary of the county inspector of apiaries shall be four dollars per day when actually engaged in the performance of his duties, and itemized necessary traveling expenses incurred in the performance of his duties, as prescribed in this act.

SEC. 7.—The inspector of apiaries may, in his discretion, order the owner or owners, or other persons in charge of bees kept in box or other immovable or stationary comb hives in apiaries infected with foul brood or any other infectious or contagious disease, or within a radius of three miles of such diseased apiaries, to transfer such bees to movable-frame hives within a reasonable time to be specified in such order or notice; and in default of such transfer by the owner or owners, or other person in charge of such bees, the inspector may destroy or cause to be destroyed all such hives, together with their contents, and the expense thereof shall be a county charge, as provided in section two of this act.

SEC. 8.—Any person or persons who shall import bees into the State of California, which said bees are not accompanied with a certificate from a duly authorized inspector of apiaries, or bee-inspector, certifying that such bees are free from foul brood and other infectious or contagious diseases, or who shall import bees from another county within this State not having a

bee inspector, into a county having a bee inspector, shall immediately, upon receipt of such bees, cause them to be inspected by a duly authorized inspector of apiaries; and if such bees are found to be infected with foul brood or other infectious or contagious disease, such inspector shall proceed to have such disease eradicated, as provided in section two of this act. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor.

SEC. 9.—It shall be unlawful for any person owning or controlling bees within this State, which are known to be infected with foul brood, or other infectious or contagious disease, to remove said bees to a new location, without first giving ten days' notice to the county inspector of apiaries, stating when and where he intends moving said bees. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor.

SEC. 10.—Any person or persons whose apiary is infected with foul brood or any other infectious or contagious disease, and who sells or offers for sale from such infected apiary any bees, hives, bee fixtures, or appurtenances, or who shall expose in his bee-yard or elsewhere any infected comb honey, beeswax, or other infected thing, or who conceals the fact that his apiary is so infected, shall be deemed guilty of a misdemeanor.

SEC. 11.—Any person or persons who shall resist, impede, or hinder in any way the inspector of apiaries in the discharge of his duties under the provisions of this act shall be deemed guilty of a misdemeanor.

SEC. 11.—This act shall take effect immediately.

THE USE OF CARBON BISULPHIDE.

Why It may Prevent Comb Honey from Candying; a Motor Bicycle for Running a Honey-extractor; Shallow Brood-chambers.

BY GEO. A. BATES.

If honey really does not candy in combs that have been fumed with carbon bisulphide, the reason is easy to guess. The bisulphide is a solvent of wax, and its vapors might easily soften the cappings as damp weather softens glue. Then you would expect the soft and therefore adhesive cappings to run together wherever the bees have left a crack. That they do leave cracks is shown by the way comb honey absorbs moisture when careful customers put it in the ice-box to keep. Once the cells are sealed tight, there is no mystery about the failure to candy, and the bisulphide would evaporate and leave the wax hard on the very first chance.

In fuming combs I like to spread a cloth wet with the bisulphide over the top combs. This fills the pile of boxes with saturated vapor almost at once, while it takes quite a while to climb over the rim of a saucer; and as diffusion is going on all the time, it never gets as strong.

Here in New York the price of carbon bisulphide is 12 cents a pound, if you furnish the bottle. This is so much less than the price you mention (35 cents) as being charged by drugstores, it seems as if something ought to be done to bring it within the reach of bee-keepers at a more reasonable cost.

The above bisulphide is double-refined. The cheaper kind is listed at 7 cents in 50-lb. lots, and ought to be good enough.

I am using for hives the 5¾-inch-deep supers, ten-frame, two or three of them for the brood-chamber. Such a hive has many good features—one being that, in these shallow frames, thin surplus foundation can be used. I have been using it for three years now; and another is, that every thing is interchangeable. But they are principally useful for "shook" swarms and similar manipulations. Last summer I tried R. C. Aikin's plan on three colonies (GLEANINGS, 335, 1901), with great satisfaction, and this summer ought to be a good test, for the way the bees swarmed was rather exasperating. You don't have to hunt for the queen—just slip in the excluder, and at the end of the ten days there is no chance of mistake as to which side she is on, and she can be set aside to build up for the fall flow, which they did this year to the extent of three stories of brood; but then there has been no lull in the honey-flow at all this year up to date, Sept. 1. If the plan will work this way every year it will suit me better than any kind of brushing.

Why these doleful wishes that the gasoline-engine could be controlled so as to run an extractor? I should be quite happy if that were the hardest problem to solve in connection with bee-keeping. A motor with changeable spark-time, like the bicycle-motors, ought to be very satisfactory, if used with a fair-sized fly-wheel and a friction clutch. For that matter, why not use a motor-cycle? It will carry you to the out-apiaries, and do the work when you get there. I have had my lathe running by butting the back wheel of a motor-cycle against the fly-wheel, the bicycle, of course, being raised so that the wheel can turn freely. I expect to do a great deal of sawing on this plan before spring.

You may say that the expense is prohibitive; but that is not necessarily so. Our motor and accessories, not counting the bicycle, of course we had that, have not yet cost $30; but it is home-made, and it is not likely that many bee-keepers have the necessary tools. Yet a very good cycle-motor can be purchased in New York for $27.50 from the Chas. E. Miller Co. An acquaintance of mine is using one. We had it here to test, and it seemed very well made indeed. It ought to be possible to get motor-cycles, second-hand, at a reasonable price before long.

We have recently been using a 12-horse-power Packard motor carriage by jacking up one rear wheel and putting the fly-wheel of a screw-cutting lathe in contact with it; but it is rather too much of a good thing. A friend in the neighborhood has just built (or altered) an automobile for prospecting. It has a 25 horse-power gasoline-motor, and a pulley at the back of the machine for extracting rock drills or any thing else. The engine-shaft runs straight through to the back of the machine. The greatest objection at present is the lack of a governor on such motors. It takes one person to regulate the speed and another to do the work.

Highwood, N. J.

[I had not thought of the use of a motor bicycle for running an extractor. Sure

enough, it would carry the apiarist to his outyard, and then could be hitched to an extractor with the proper transmission, throwing out the honey while the combs are being uncapped. There may be more in this idea than appears at first on the surface.

In looking up this gasoline-engine subject I found that the simplest and most practicable means of control is by the lead of the electric spark. I will explain, for the benefit of those who are not familiar with the gasoline engine, that a charge of gasoline and air is drawn in at one stroke. The piston returns, squeezing the charge into about a third of the space it occupied when the piston was out full length. Just at, or before this point, an electric spark explodes the mixture, generating a great pressure, forcing the piston out. The return stroke exhausts the burned gases, when a new charge is drawn in as before. If the electric spark is fired when the compression is greatest, then the greatest speed and power are evolved. The firing of the spark can be timed to take place at any point in the stroke; and, obviously, the later the firing, the less efficient the charge of gas will be. Less power will be evolved, and consequently there will be less speed. This method of speed control, in connection with throttling the gasoline, which still further reduces the speed of the engine, is the one that is used on the best automobiles of to-day.

It is not practicable to throttle a gas-engine as one would throttle a steam-engine; but a great range can be secured in the manner above explained, sufficient to give the necessary speed to an extractor, fast or slow. As soon as we can, we will construct a gasoline extracting-outfit something on the lines suggested. But before building such a machine we desire to study up the subject thoroughly in order that we may put out the most practicable machine that can be devised. In the mean time we shall be glad to receive further suggestions.

A little motor that is used on bicycles would run an extractor very readily, and it would not be very difficult for one of an ingenious turn of mind to rig one up. In the mean time, where a correspondent is able to develop the idea we hope he will furnish us a photo or drawing of the entire rig, so that we can present to our readers the newest and latest thing in honey-extracting. Perhaps Mr. Bates will develop it.—Ed.]

THE HEALING POWER OF HONEY FOR DOMESTIC ANIMALS.

BY WILLIAM A. M'KELLIP.

U. S. Consul, Magdeburg, Germany.

One can see from the following instance, taken from an article by a Mr. Kuederli, in the "*Swiss Bee Journal*," that pure bee honey can be of very great service in the care of domestic animals.

A very fine cow of the author's became very difficult to milk after calving, and was for this reason operated on by a veterinary surgeon. Whether insufficient care was taken during the operation, or from other causes, the cow was taken with a severe inflammation of the udders, during which she gave, instead of twenty liters of milk daily, only seven to eight. Movable hard bodies formed inside the udders, which defied every treatment employed. The owner then remembered that he had read somewhere that, in the case of swellings and inflammations, pure honey often brings about very satisfactory results. Therefore, after milking, he rubbed warm honey into the cow's udders until the honey had thoroughly soaked into the skin. Even after the first trial, an improvement was noted; the cartilaginous formations grew smaller, and disappeared entirely after ten days, and the quantity of milk increased to sixteen liters daily.

Results just as surprising were gained by a teacher who used honey for his fowls, about which he informs us as follows:

A very fine white turkey, which had always had a very good appetite, suddenly lost the same, always sought the coop, and let his head hang. He had, according to all signs, a high fever. When one opened his beak, it was full of slime. After the owner had waited four or five days for an improvement, he remembered his honey-pot, which had already been of service in the sick-room in case of fever and catarrhal troubles. He thought that what is healing for man ought to help the beloved bird, and his hope was fulfilled. He brought some bits of candied honey, and, while his wife held open the patient's beak, he pushed in three or four pieces, one after another. Some hours afterward he went again into the coop in order to repeat the treatment. He had this time taken a piece of brown bread with him, and dipped small bits of it in fluid honey. After he had pushed down the first piece, the turkey snapped at the second, but was either too awkward or too weak to swallow it without assistance. After three or four pieces of honied bread had been given to him in this way he regained his old appetite, and—thanks to our honey cure—completely recovered.

A short time afterward, the teacher noticed that one of his Minorca hens, which he had raised himself, refused to eat, and every few minutes emitted a sneezing sound; the head was also somewhat swollen. At the same time he found out that a rooster of his neighbor's had had the same trouble for several days. In the latter case the head was so swollen that the fowl had not been able to open its eyes for several days. He shut his sick hen in a cage, therefore, and began his honey cure. Three days afterward it was possible to let her out in a healthy condition. The next day another fowl was taken sick with the same symptoms. Then he said, "It is high time that I take to my well-tried cure." He put the end of his finger full of honey several times into

the bird's beak, and when he paid his patient another visit in an hour and a quarter the sound in breathing had totally disappeared, and the sneezing stopped also in a few days.

"I am firmly convinced," said the teacher, at the close of his communication, "that in the case of catarrh, and in the first stages of diphtheria in fowls, no better medicine exists than honey, to be given every two or three hours, and I should like to advise every one to use this simple and cheap cure in such cases."

BEESWAX IN THE TROPICS.

How its Production may be Made Profitable; how Extracted Honey and Wax for Market can be Produced at One and the Same Time; Squeezing the Combs in a German Wax-press, and Selling the Wax; why Tropical Honey may be Just as Good as any Northern.

BY W. K. MORRISON.

Some of the tropical apiculturists, owing to the low price of honey, are disposed to pay more attention to the production of wax, which is now rather high in price viewed from the standpoint of the buyer. Most bee authorities have laid it down that wax production would not pay. This may be true of the temperate zone, while it may be very different in the hot latitudes. By way of preface, however, it may be pointed out that the price of really first-class honey in the English and Continental markets is not low at all—rather it is that tropical-honey producers neglect quality for quantity. More attention to quality should be the watchword of the tropical bee-master, for I hold the opinion that just as good honey can be produced "way down south" as "up north." It is all in the method.

It is quite possible to produce a fair amount of wax, and at the same time improve the quality of the honey produced, even though that great oracle, the A B C of Bee Culture, should say otherwise; and if I lay down the dictum that better honey can be secured by dispensing with the centrifugal extractor, don't all shout at me at once.

One of the most important points in wax-producing is to have no drone comb in the brood-chamber. Now, this means just what it says. Apiarists have often assured me their brood-chambers contained no drone comb, when, as a matter of fact, it contained what I should term a goodly quantity.

As soon as the honey season arrives, or is about to arrive, put on queen-excluders over all the brood-chambers, and place on the surplus chamber with frames containing only starters. Having no drone comb below, the bees will simply make a rush to construct some upstairs long before the honey-flow has reached its zenith. If the beekeeper gets the chance he can cut out some of the comb before the bees get honey into it. But what will probably suit most people is to wait and let the bees fill the comb with honey, allowing it to be sealed over and fully ripe.

The next procedure is to cut the combs out, leaving about an inch in each frame as a starter, immediately putting them back. The combs so cut out may be put in the German wax-press, and the honey pressed out. This is the most expeditious way, and does away completely with the mussy job of uncapping. If proper care is used in the various manipulations the honey may be run into packages at once, as squeezed honey requires no straining or settling. In England and other European countries, honey-presses are quite common, and can be bought in London for $1.50.

This may seem like going backward, but it is far from it, as a little experience will show. Fine combs built on foundation in the brood-chamber, with queen-excluder zinc, are things not thought of by old-fashioned folks, and yet these are the essentials of successful wax-production in the tropics; in fact, it is hardly worth while to try to get along without them.

A great many colonies can be handled by one person in this way, swarming is effectually controlled, and worry reduced to a minimum. For example, there is no trouble in keeping the combs free from moths from one season to the next.

There is, however, another plan by which more wax is secured and less honey. In this case the same brood-chamber is used with the zinc excluder. But, two surplus chambers are used, preferably two Ideal supers with shallow frames. The upper one is allowed to be filled with honey, but the middle one is cut every week or so before the bees get a chance to fill it with honey. The apiarist, however, has his work cut out to keep the middle chambers clear of combs. The bees seem to "abhor a vacuum," and constantly build up the combs so ruthlessly torn down by the apiarist. Of course, this plan implies considerably more work than the other, but more wax is actually produced.

One of the cardinal points in wax production is to have no melting of the wax. If melting is resorted to it adds to the expense, and is entirely unnecessary. A Boardman solar can be used; but if I were using it I would alter it considerably. I would use aluminum instead of sheet iron, as it keeps more heat, and is much cleaner. I would abolish the strainer, and use a dam instead to catch sediment. Wax should be molded square, and shipped in boxes to suit foreign markets, and the net weight of the wax should be marked on the box.

White paper should be used to line the box; if not, dust gets in and reduces the value of the wax; for if the least bit dirty, the buyer has to refine the wax, and, of course, that being so, he will pay less for such wax.

There is really no reason why a large amount of wax may not be shipped from the West Indies. The conditions are favorable; and with intelligent care the product ought

to rank very high. Cleanliness is an all-important point, and it is easier to prevent impurities getting into the wax than to take them out afterward.

[There is a great deal of practical value in Mr. Morrison's article, and especially to those in the southern part of the United States, and in the tropics. I do sometimes think we concentrate too much of our energy on *honey*-production only, overlooking the fact that wax is high in price. There are times when a low-priced honey, due to poor markets or excessive freight rates, will make wax-production very profitable. The scheme of using an ordinary wax-press, perhaps such as may be had of any dealer, and squeezing the honey out of the combs and selling the wax in the good old-fashioned way, deserves more than passing attention. In European countries wax-presses are common articles of sale among the dealers. Wax is high in price, and both the honey and the wax are produced at one and the same time. With such conditions the honey-extractor is superfluous; and the wax-press, or, perhaps, more exactly speaking, a honey-press, is a necessity.

At the Buffalo convention of the National Association, some four or five years ago, Mr. R. C. Aikin produced a temporary shock on orthodoxy by soberly announcing that it was his private opinion that more money could be made by crushing the combs for the *wax and honey* than by extracting them for the *honey alone*. Perhaps I have not stated this exactly as he put it; but I am not so sure but that certain conditions of market and locality render this a statement of fact. We should be glad to hear from those in position to speak from experience.—ED.]

BEE-KEEPERS ON THE KICKAPOO RIVER.

Practical Plan for Insuring Bees against Fire Loss.

BY HARRY LATHROP.

For a few days I have been visiting some of the bee-keepers on the Kickapoo. This was for years a locality very much noted for its great crops of basswood honey, Viola on the Kickapoo, and Richland Center on Pine River, being centers of honey-production. But I am sorry to say that the field is on the wane so far as honey-production is concerned. The buzz-saw and the excelsior-mill are fast ruining the trees that have made this locality famous.

I have recently visited the bee-keepers over on Pine River, including the Pickards and C. A. Hatch. The Pickards use and prefer the Gallup hive and frame for extracted honey, as does G. W. Wilson, with whom I have just had a pleasant visit. Mr. Wilson still gets fair crops of honey at his home yard, as he has done for many years, and I believe his methods are worthy of consideration, His hive is the same size in length and width as the eight-frame "L." hive, but it contains 12 frames that are 17¾ inches deep. He has strong colonies, the deep frame being favorable to safe wintering and abundance of stores. For the production of extracted honey I believe I should prefer his hive to any thing else I ever saw. But for comb honey, or for comb and extracted both, give me the standard L. frame or the seven-inch case. One great trouble with the L. hive is that the bees are so often short of stores, and require so much feeding. It is the deep hive that always has "too much honey" that will uniformly show up a strong colony for the working season.

But in this short paper I wish to introduce a subject about which Mr. Wilson and myself had a very earnest conference. It relates to insurance against fire on bees while in the cellar or on their summer stands. Mr. Wilson stated that he could not get any insurance on his bees, and I have heard others say the same thing. I have carried some, but the rate was high. Now, what we propose to have is a mutual-insurance association to be operated through or among the members of the National, or among the members of each State association.

I think it should be so arranged that the bees of each member should be insured against loss by fire at any season of the year, for two-thirds of their actual value, to be determined by an appropriate board. In case of a loss each member would be assessed pro rata according to the number of colonies he owned at the time of the loss. For example, A is a member; his bees are entirely destroyed by fire. It will require an assessment of one cent per hive on all the bees owned by the membership to repay the loss of A as determined by the official board through their local agent or otherwise. If B owns 55 colonies his assessment would be 55 cents. What do you think of it?

You remember that I was up here several years ago, and met a bee-keeper (?) who gave me some pointers regarding "foul brood," stating that he had "seen it so bad that there were at least a dozen eggs in each cell." I met the same man the other day, and did not know him till the subject of foul brood was incidentally mentioned. He then asked me if I could tell the queen or worker bee that caused it. I caught on to the fact that he was the same party, and at once changed the subject. I will close by informing you that the Wisconsin bee-keepers are not all dead, nor have they all decided to go to Colorado.

Calamine, Wis.

[It is true that ordinary fire-insurance companies will not take any insurance on bees. There is no reason why they should be a greater hazard than ordinary farm property. I am not sure but the National Bee-keepers' Association might do well to give this matter consideration. Suppose, for example, we have, in addition to the

regular dues of $1.00, a special fee for insurance — say 50 cents on a colony. Is it not possible that a fourth or a half of the members would be on the insurance list? Suppose we have one-fourth. There would then be a fund, according to the membership as it now stands, of $125. Now, out of the $125 there would not be one loss in 25 years. If experience should show that insurance could be carried for less, then reduce the fee. But suppose we started out by offering to insure the bees for 50 cents more than the regular fees of $1.00. This would place in our treasury quite a large sum. In four years it would net $500. I am not so sure but the Association could undertake to insure bees for the simple annual dues of $1.00. This would protect them from litigation, against loss by fire, and would secure all the other privileges of the Association. The effect of such a feature would be to stimulate a large growth in membership. If the indemnity feature in the event of fire were limited to a sum not to exceed $200 in any one case, it would prevent depleting the treasury. But before the Association should attempt to take in the insurance feature without any additional cost, it should impose an assessment for the privilege, and then see what experience would determine in the future.—ED.]

NEW OR OLD COMBS FOR QUEENS.

Foundation in Full Sheets for the Brood-chambers and Supers Advocated, and Why.

BY H. H. HYDE.

I have noticed the discussion of late as to which a queen prefers—old or new comb in which to deposit eggs. This whole matter rests on the age of the queen and the prosperity of the colony; but it may be safely said that, upon the whole, queens prefer old combs to new ones. In the early spring of the year, all queens prefer the old combs, and will often fill them with brood when they will not touch the new combs. I have thought that, perhaps, the old combs having several generations of cocoons in their cells, were warmer for that reason, and consequently easier for the bees to keep the brood warm. Young queens will lay in new combs almost as readily as old combs. When the colony is prosperous, or after warm weather has come, I can not see that there is much preference shown by queens as to which they prefer, old or new combs, there being but slight preference shown for old combs. All failing queens will not lay in new combs at all unless that is all they have in which to lay. I am not an advocate of changing combs every few years, but I do believe that, after ten or fifteen years' service, all combs should be replaced with new ones for various reasons, chief of which is, I believe, it is a good plan from a sanitary point of view, and the possibility that, from long use, the combs seem to get too heavy and full of cocoons.

I am not giving the foundation-makers a free puff, but it is my experience that it pays us at all times to use full sheets of foundation in the brood-frames, whether it is when building up by the nucleus method, taking care of swarms, either natural or forced, or in extracted-honey production. We have 1000 colonies of bees, and have tried using foundation in different ways and in different amounts from starters to full sheets, wired, and we now use full sheets of foundation in the brood frames. By this means we get all worker combs, which is one of the chief considerations; and, besides, we believe the gain in honey is more than sufficient to meet the cost of the foundation. In the supers we have used starters, half-sheets, and full sheets; and we believe that the gain in honey by using full sheets will pay the cost of foundation several times over. Last year was a very poor one for honey. We had only one short irregular flow; colonies that had supers of full sheets of foundation built out the frames and capped the honey, while colonies having even half-sheets were away behind in the way of honey. If we had had full sheets in all our supers last year we would have harvested one-third or one-half more honey.

In a good year the difference is not so apparent, but none the less real. We do not notice the difference so much. While the honey-flow is good, colonies build out the frames having starters about as well as those having full sheets; but those having full sheets are filled the quickest; for during a rush of honey *wax is precious*, and the bees do not naturally secrete enough wax to keep pace with the honey brought in. Now, when we give full sheets we have placed them where they have enough wax to make a good start on the combs, and the result is we get, in our experience, from one-third to one-half more honey. We use the Ideal shallow-frame supers; and while localities may differ, we can not see that, in the majority of them, this could affect the matter of using full sheets or less; for we have found them best for both slow and fast honey-flows. In our locality we get our first honey April 1st to 10th, and the flow continues off and on until in July; hence we desire all the brood we can get in the brood-nest; and by using foundation in full sheets we are able to get more brood there, and more honey in the supers; and it is highly important to keep up the brood-rearing until the middle of June. If we were in a locality having only one short honey flow, and did not desire increase, then I suspect we would prevent all swarming possible; and where we could not, hive on starters in brood-frames and full sheets in the supers; for extra comb and brood after the honey-flow would be of little value, and too much of the latter would be objectionable.

CYPRIAN AND HOLY-LAND BEES FOR TROPICAL CLIMATES.

"Our own apiary in sunny Cuba," Feb. 15, was very interesting to me, and I note that A. I. R. has found trouble in getting

the bees to rear brood in the winter time, they being disposed to fill the brood-nest with honey, and the queens being indisposed to lay. Now, what you need down there is Holy Land or Cyprian bees, either pure or their hybrids. They will give you all the brood you want, and will keep you raising colonies of bees that will just roll in the honey. A. I. R. seems to think that they would be too hard to control in the way of swarming. Not so, Mr. Root; they are less inclined to swarm than Italians if you will give the queens room and the bees room to store their honey. Don't undertake to use the same small hives with these strains that you use with three-banders. If you do, then they may be inclined to swarm. They must have room; and if they can't get it they will swarm—otherwise not.

Our locality is one of long honey-flows, and we have found that, if we use three-banders, they may be all right for the first flow; but that ends it with them; after that they reduce the brood and allow the hive to become clogged with honey. Extracting the honey out of the brood-nest will do some good, but not much; hence we have turned to the more prolific races of bees, as they give us more honey and less manipulations and less watching for swarming when we give them plenty of room. For all localities having two or more flows or one long slow flow, Holy Lands or Cyprians are decidedly the bees to keep. Introduce some of the blood into that Cuban apiary, and you will see things move along much more satisfactorily.

GENERAL ARTICLES PREFERRED.

I notice, Mr. Editor, that you call for expressions as to which part of GLEANINGS is the most instructive—the general articles or the departments, especially that of questions and answers. For my part I prefer as much of the general articles as possible, for I get but little out of the questions and answers department. True, there may be things learned occasionally by perusing that department; but I think the time wasted in reading is more than the kinks learned, and for that reason I am in the habit of passing that department with little or no notice, seldom doing more than glancing at the headlines. I, of course, suppose that, for the beginner, the department of questions and answers is the most valuable, and that you as editor will have to give us some of both. I certainly appreciate your willingness to give us what the majority of the subscribers prefer, and you may record me as preferring general articles.

Floresville, Texas.

[From a sanitary point of view it may be advisable to renew the combs every few years providing foul brood or black brood has ever been in the vicinity. In our own case we found we never really got rid of the disease until we had renewed all our combs that had been used somewhere in the apiary during the time we had foul brood just before. It would be continually cropping out.

My earliest and first experience in bee-keeping was with Cyprians and Holy Lands, and I should readily suppose that, where other races were disinclined to rear brood, they would raise their full quota in season and out of season, first, last, and all the time. This quality in a warm climate, where the honey-flows are long, is a good one; but it is a very undesirable one in northern localities where the season is short, and where one wishes above all things not to have all the winter stores used up in useless brood-rearing when there will be no subsequent honey flows. Even a dash of the Eastern blood in ordinary Italian stock will greatly increase the amount of brood.

Yes, I can readily see why you generally prefer general articles, for you are no novice, although, if I am correct, you are under 25 by considerable. But do not make the mistake of supposing that the department of questions and answers is designed for beginners only. Over half of that department relates to discussions with the veterans. If you skip it from the force of habit you may fail to get some of the best that is published in this journal.—ED.]

THE ARRANGEMENT OF HIVES IN A BEE-YARD; THE GROUP PLAN OR INDIVIDUAL PLAN.

Allow me to say that I consider your footnotes one of the best features of GLEANINGS; and if it is not intruding upon your time too much I would offer the following footnote to your footnote:

Where is the difference, where the economy in room and steps, to have your bees in close-sitting groups of five or ten feet apart, or to have them scattered with two feet between? I always imagined I had my bees spaced as closely as possible and have the necessary elbow room to work among them. The reason why I want from two to three feet between my colonies is because, when working with my bees, I always stand beside the hive, not behind; besides, I like to have room for a new swarm (it may be the old one) beside every colony. Then to have the rows eight or more feet apart is to have a chance to set the old colony ahead of the old stand, which is very convenient when shaken off or back of the same, as in cases of hiving on the old stand. I practice both methods more or less. Besides, when working in one row the operator does not stand so much in the bee-line of the row next behind him as when they stand closer.

You are right. It causes quite a little trouble and annoyance to shift back and forth in fall and spring; but to prepare our bees for winter, and winter them, no matter in what way, is connected with more or less labor. I can not see how I can lessen the trouble of my way of packing very much unless I suffer other inconveniences. Since another winter has passed, I am more and more in favor of tenement chaff packing for wintering. It is less trouble than wintering in cellar; and for the few years I have practiced it, it has proved successful beyond all my expectation. Again this winter, every one of my colonies so prepared has wintered well (to judge from appearance—they are not unpacked yet), and they all brought pollen the 18th of this month.

Why should I lose any bees in shifting about? If it is done cautiously, not a single bee need be lost on account of it.

Your compositor made me say 4 per cent. It should be 40 per cent.

G. C. GREINER.

La Salle, N. Y., March 21.

[Possibly I put the distance between the individual hives in the group too close. As I look down at my shoe, No. 7, I find by actual measurement it would take just 11 inches. Come to think about it, the actual distance between our hives in the groups is about 12 inches; and the groups themselves are anywhere from 8 to 12 feet apart, depending on the room and the location of natural shade. But you may ask what my big foot has got to do with the spacing of hives in groups. Why, I sit down on one hive, putting my foot lengthwise between the hives. I therefore stand beside the hive just the same as you do, and yet have plenty of room for my feet.

I would set it down as a rule for the group plan, to set the hives just far enough apart so one can get his feet down between. If one wears No. 9 he will, of course, gauge the distance accordingly.

The arrangement is very handy; and I am satisfied that, if you will put your hives out on that plan this spring, you will never go back to the old way. You see, the principal advantage is this: Suppose you are carrying a basket of tools, and you also have a filled super or two containing frames of foundation which we will say you are inserting to give more room. On a group of three or four hives, don't you see you would not have to move your tool-box or your stock of frames? Every thing is within arm's reach. And another advantage, you can sit down on one hive and work at the other. When the hives are stationed each one by itself it takes more room, and requires moving all the paraphernalia every time one moves from one hive to another. But still another advantage, the group plan permits of a driveway between the groups. Figure it as you may, you can get more hives in a given area, and have more room for a wagon, than you would have by having a hive here and a hive there, each six or eight feet apart.

Still again, I do not see how you can move bees back and forth every spring and fall without entailing more or less confusion, *and some loss*. I once was dissatisfied with a row of our hives, or groups, rather, which the boys had stationed at one of the outyards. You see, they put one row of groups, each one on the *south* side of our basswood-trees. I was disgusted, and forthwith proceeded to change the groups to the north side. Well, the bees found their location, it is true; but, oh what confusion! They hovered around the old spots, notwithstanding each group was stationed on the north side of the tree, with the hives in the *same relative* position that they were in on the south side.—ED.]

A MISSTATEMENT CORRECTED; HOW POLLEN IS PACKED IN THE CELLS.

In the A B C, under the caption "Pollen," you seriously quote, from an antique article, statements purporting to describe the bees' manner of packing pollen in the cells, i. e., by ramming it down with their heads. Isn't it rather queer that so absurd a statement should have found a place in the book, and have stayed there so long? However, it is no stranger than lots of other absurd ideas concerning bee life which pass current simply because somebody who chances to be prominent—though any thing but eminent—has so stated.

Just conceive of that delicately poised head, its beautifully articulated antennæ, the simple and compound eyes so wonderfully and carefully protected by hairs, being used as a battering-ram! Even a superficial examination should convince any one that a bees' head was never designed for any such purpose, nor is it ever so used. Organs are always so formed as to fulfill most perfectly their functions, and certainly there is nothing to suggest a ram in the construction of a bee's head. Watch a bee try to pass through a small space; watch it in its work about the hive, passing in and out among the masses of bees, and see how carefully the head is always moved. At times the bee seemingly pushes recklessly forward, but it is only seemingly. If the bee does not ram the pollen down with its head, how then is it packed so solidly?

After a bee has kicked off its load of pollen it moves away unconcernedly, leaving the two pellets lying loose in the cell, together with others, sometimes. Soon another bee comes along, pokes its head in, possibly nibbles at or licks the fresh pollen, gives it a little push, and backs out; hesitates, moves aside only to return and begin packing that pollen in solidly. This is how it is done: The pellets are pushed to the bottom of the cell, or against what pollen is already packed there, and then begins a patient rubbing, spreading, kneading, and packing of the soft pollen by the

mandibles. These are closed, and used to *push* with, just as they are used in much of the waxwork about the hive. Wonderfully dextrous is the little bee in the use of those marvelous organs which are hands, teeth, and full kit of tools combined.

While on the subject of pollen, it may be of interest to learn something as to how bees eat it, how it gets into the mouth. They can not bite it off with the mouth and chew it, mixing it with saliva so as to swallow it; and if gnawed off, how does apparently dry matter get to the mouth? Freshly gathered pollen is often licked off by the tongue, and passes thence directly into the mouth, but more often it is bitten off by the mandibles; is softened by the secretions from the large glands opening on to the mandibles, and thence passes into the mouth, but just how I do not know. It is quickly done, and, owing to the location of the mouth, has so far escaped my every effort at discovery. ARTHUR C. MILLER.

Providence, R. I., Jan. 13.

[You are doubtless correct, and the item in the A B C has been marked to be stricken out of the next edition. As it has been credited to the *British Bee Journal*—one that is supposed to be reasonably accurate and careful in everything relating to science—it was allowed to go through edition after edition. But one may raise the question, "How do you know what the bees do when their heads are inside of their cells?" The bodies of the bees plug the opening so that no mortal eye can see what is going on. Nevertheless, I think you are correct, for the special construction of the antennæ and the form of the eyes are such that it does seem ridiculous (when once we come to think about it) that any one should soberly attempt to put out the dogma that the bees use their heads as a "battering-ram." There is great strength in the mandibles of the bee, and these they use for all sorts of mechanical manipulations. We may assume, without fear of successful contradiction, that they use those same instruments when their heads are concealed from view within the cells. I have seen bees grab hold of a piece of wax, and pull and push; but the point of pressure was on or between the mandibles and not on the antennæ, nor the delicate compound eyes.—ED.]

BEES CHILLED TO DEATH (?) COMING TO LIFE AGAIN.

I write concerning an experience I had with my bees a few days ago. I found one of the colonies dead, as I thought. The day before was a nice warm one, and the bees had a good flight. This hive I knew was weak, and also alive a week before, so I decided they had been robbed, as there was no honey in the comb. In looking over the dead bees on the bottom-board I saw the queen all curled up. I put her in a paper, and put that in my pocket. A few hours after, I took her out to show to some of my friends, and, to my astonishment, I found her alive. I then went and gathered up all the dead bees that were in the hive, put them on a wire screen, and held them over a warm stove. Pretty soon they began to crawl. I shook them all back into the hive, and placed them close to the stove, and fed them with warm honey, and now two-thirds of them, apparently, are as well as if nothing had ever happened to them. Were they dead or not? and what made them die so soon after being robbed — less than twelve hours? FRED AMES.

Rockland, Mass., March 9.

[The case you describe appears to be nothing more nor less than starvation and subsequent chilling, neither of which was sufficient to kill the bees. I should assume that the conditions you describe happened in this way: You say the day before was nice and warm. Possibly the bees were robbed out on that day; but more than likely they were on the verge of starvation, and were very weak. As soon as they warmed up they dropped down on the bottom-board, from sheer weakness, with the queen. They again became chilled. You happened on the scene just in time to save them from dying. Warming the queen up and giving her honey was just the kind of medicine she needed; and the same treatment offered to the bees resuscitated them, of course, at once. I think you may rest assured that the bees were never dead, or else they would not be "apparently as well as if nothing had ever happened."

Some years ago we had a report of bees that had lain on a window-sill all winter, in a room subject to zero temperature. It was reported by a bee-man at one of our conventions that those bees on one warm day in spring actually revived. We made all manner of fun of him — asked whether he was joking, or really meant what he said. He was quite indignant, and insisted that he was not joking — that those bees came to life just as do flies on the window in the spring after hibernating over winter. But from the fact that no scientific observers have ever confirmed any thing of this sort, and the further fact that no proof has been produced to show that bees hibernate as do flies and other kinds of animals, we are compelled to conclude that, if they have been in a chilled condition for months, they will stay dead. If any of our subscribers are in possession of scientific proof to the contrary, we should be glad to have the facts.—ED.]

FEEDING BEES IN THE SPRING.

Personal experience in any business is valuable, and the troubles of beginners are sure to be of interest to others in the same class. I am a beginner, and this is the situation: Two colonies in the cellar quiet, and I think doing well; the third, which was a small after-swarm, is dead. I believe their hive is full of comb. There was a third swarm, which got away, all from one colony purchased last spring. They

also produced about 50 sections of fine alfalfa honey.

They are called pure Italians, and are in modern eight-frame hives. Now, what I want to do is to get about 200 lbs. of honey next season, if possible, and after that increase numbers what I can. There are no other bees near here, probably not within 30 miles; but there are several hundred acres of alfalfa near by; and as over 100 of it is my own it won't be cut *too soon*. How shall I manage to get the best results, first in honey; and, second, in increase?

Do bees gather honey from cottonwood? also black sage of the prairies?

How often should I open the hives to examine them while in the cellar, and also after they are out?

They were outside until after Jan. 1, and had a good flight two or three days about that time. There are great quantities of rose brush along the river as well as numerous other flower-bearing shrubs. Do you think this would be a good place for a large apiary?

My object at present is to supply our own table, and learn the business; and, as I get older, perhaps devote a good part of my time to it and let the younger boys pitch the hay. DAN SLAYTON.

Lavina, Mont.

[I would advise you to set your bees out as soon as practicable in the spring; and when the weather is warm enough so they can fly every day, feed them about half a pint of syrup daily, up to the time the first honey comes in, but not after that. This will strengthen the colonies, for strength is one of the most important requisites I know of in the production of honey. You might practice a little spreading of the brood, as recommended under the head of "Spreading Brood," in our A B C of Bee Culture. After the honey-flow is over, start in for increase by dividing, as recommended under the head of "Nucleus," in the A B C book.

Hives in the cellar should not be opened at all. In the summer they should be examined only enough to see that they are doing well. Once or twice before the honey-flow may be enough. A practiced eye will tell pretty well from the outside of the hive how well the bees are doing.

Bees gather honey from cottonwood and black sage in California, and I see no reason why they should not gather from the same plant in Montana. Yes, you could carry on the bee business quite extensively, and have a large apiary, if you have the requisite skill, where you are.—ED.]

THE NEED OF A FOUL-BROOD LAW IN OHIO.

It has been frequently urged in bee journals that one of the pressing necessities of the times is the enactment of a law in every State of the Union to protect the apiary from the ravages of foul brood and other contagious diseases among bees. It is to be regretted that so large and important a State as Ohio has no such law on its statute-books; yet from government statistics it produces more honey than Colorado; its bee-keepers are more equally distributed over the State, and the consumption of honey in its manufacturing industries is so large that other States have to be drawn on to supply the demand. A number of bee-keepers in Cincinnati, and adjoining suburbs in the county of Hamilton, held a meeting in August last, and formed the "Hamilton County Bee-keepers' Association," the first of its kind exclusively in this State, with a membership of 50; and at each monthly meeting of the executive committee new members are being enrolled; and from all indications, when the constitution and objects of the association are fully understood by bee-keepers, still greater accessions to its ranks are expected, as in this county there are upward of 500 bee-keepers.

The executive committee feel gratified and enthusiastic at the result of their preliminary efforts. They would strongly urge, through the medium of GLEANINGS, that similar initiative steps be taken by bee-keepers in each of the 88 counties in the State, as early as possible this ensuing spring, so that this association may have the strong co-operation and united support in demanding of the legislature, through their respective delegations, the enactment of laws as in California, Colorado, Wisconsin, Michigan, New York, etc.

The executive committee solicit correspondence from prominent bee-keepers in each county in furtherance of this object.

WM. J. GILLILAND, *Sec.*

Silverton, Ohio.

[The bee-keepers of Ohio should make a special note of this. The States of New York and Michigan, and province of Ontario, are protected. At present Ohio may be a good dumping-ground for foul brood. Illinois is endeavoring to get a foul-brood measure through its legislature, and may succeed. I suggest that we make an effort to form a State association, and with that end in view I should be glad to receive the names of our Ohio bee-keepers who will be willing to deposit a membership fee of $1.00—half of it to go to the National Association, and half to keep up a State organization—the first meeting to be in Columbus when our legislature is in session next winter. If we can appear before a committee 100 strong from all parts of the State, and then individually interview the members of both branches of the legislature, we could make a very strong impression. There is not a doubt but we could get a good law if the bee-keepers could turn out in such a way as this. Let us now receive the names of those who will be willing to go to Columbus at an appointed time this coming winter, and form a strong and effective organization—one that will have a tremendous moral influence on the law-makers? I will file the names, and then send out circular matter looking to an organization.—ED.]

WHAT GLEANINGS SHOULD BE, FROM THE STANDPOINT OF A VETERAN.

Mr. Root:—As you seem to want a full expression concerning the subject-matter of GLEANINGS, I might repeat what I once said, but put it in different language. My advice to beginners is to get one or more text-books; next, a few colonies of bees; then one or more papers. Perhaps most of the questions which are asked you as editor can be answered by telling where to find the answer in A B C; if not, it is very important to answer specifically. It takes time to learn to get all needed skill in searching such a work as the A B C book.

When GLEANINGS comes I usually read the pictures first; Straws and editorials next; then Pickings; Heads of Grain and answers to correspondents are scanned and partly read, then short articles and new advertisements. The long winded articles are held over till spare time or indefinitely. Notes of Travel are never left till the last. Home talks are generally left for leisure hours on Saturday. We should miss the illustrations seriously if they were left out. To illustrate mechanical devices, Notes of Travel, etc., adds much interest. The way nearly all eagerly watched for the Rambler's pictures proves this.

You have my thanks for the very appropriate Watkins write up on page 187. Perhaps I can show my appreciation of the same in the future.

One of the best articles for the West that you ever published, in my estimation, is the Aikin article on paper packages for honey. W. A. H. GILSTRAP.

Modesto, Cal.

ROBBING HIVES—THE PENALTY IN OHIO.

My best colony of bees, which gave me from $5.00 to $7.00 per year in section honey, and one to two swarms of bees besides, was broken into one cold spell this past winter, robbed of four frames of honey, left open, and bees froze to death. I valued this hive at $50. What is the penalty for such an act in this State?

C. C. MILLER.

Belpre, Ohio, March 23.

[The penalty in this State is very severe. The statute contemplates not only the loss of property taken away, but the actual damage to property not confiscated. The penalty is fine or imprisonment, or both, at the discretion of the court; and imprisonment may mean the penitentiary for a year or so until the thief learns the folly of meddling with bees. What the statutes are in other States I do not know; but the law should be rigid, for the simple reason that the amount of property stolen is usually very small in comparison with the actual damage done. In your case we would put up a sign offering a reward of $50 for the arrest and conviction of the party who has been tampering with your bees. Even if you do not discover the party, it may have the effect of putting him on his guard, as well as warning all others against any further meddling. Our hives have been robbed at our outyards; but after putting up a sign of the kind mentioned, no further depredations were committed, though we never found out who the guilty parties were.—ED.]

PEAR-BLIGHT; GERMS OF DISEASE PROPAGATED ONLY IN FAVORABLE MEDIA.

I wish to acknowledge my misstatement on page 98, that pear-blight bacteria would originate without any inoculation. It was my intention to say that the disease would originate without any inoculation from any kind of insects. I believe any scientist will agree with me when I say that the presence of even one thousand germs in the nectar of a pear-blossom or even the sap of a tree would not cause disease unless the nectar or sap was favorable to their propagation. It is only when the germs find lodgment in elements which will promote their propagation that they will cause disease (blight). We breathe daily thousands of germs of many diseases in the air, but they do not produce disease unless our bodies are in a position to furnish them lodgment and means of propagating. Does any one think that a limb of a pear-tree that winters over the blight would have a perfect blossom on, and the limb and nectar contain the germs to be spread to other blossoms if they did not live in the air? The first blight in the spring would have to be in a process of propagation to reach the blossom. If the disease were under such headway there would be blossom on that limb.

Williamsfield, Ill. J. E. JOHNSON.

AIKIN'S PAPER PACKAGES.

Mr. Aikin's article on paper honey-packages is all right, and a hearty vote of thanks should be tendered him for his successful experiment and invention by proving that honey can be put up in this cheap package. The honeys of the East do not granulate so quickly as the alfalfa honey of the West, so we poor fellows in the East will have to use our old-style packages for a while longer at least. I will, however, put up samples of white clover, buckwheat, and goldenrod honeys this season (providing I get some), and see how these honeys will act in the Aikin paper bags. I certainly am all taken up with the idea and success of the Aikin paper honey-bags.

Chicago, Ill. J. T. HAMMERSMARK.

WANTS GLEANINGS JUST AS IT IS.

In response to your wishes in regard to the general subject matter of a bee journal, I will say that GLEANINGS is pretty well balanced up. For me to say which department is the most beneficial to me is hard to do. Aside from the bee literature, I would not think about trying to get along without A. I.'s Home writings. It has made me a better Christian and citizen, and a more devoted husband and father.

When I open GLEANINGS I keep turning until I come to Our Homes, then I just dive in with all my heart. When this is all devoured I generally go back to Stray Straws, then to Editorial, then to Doolittle, then to Rambler; but, oh my! how it hurts me to think there is no more Rambler! How I miss him! Then I read General Correspondence and questions and answers. I think I get most information from the correspondence. So, let us have GLEANINGS just about as it is. G. W. DULEY.

Smithland, Ky., Feb. 28.

PHACELIA AS A FORAGE-PLANT IN GERMANY.

Dr. C. C. Miller says, page 8, speaking of phacelia: "But no one has told us yet about its value as a forage-plant." A Mr. Karger of Schreibendorf, writes: Mr. L., a practical farmer, sowed about the middle of May, phacelia, on a piece of ground that had been in potatoes the previous year. Notwithstanding the cold and wet weather it grew luxuriantly, and reached an average height of 80 cm. While the phacelia was in bloom, although Mr. L. fed it to cattle that had been getting grass and green clover, yet they ate it voraciously. He also noted an increase of milk in quantity and quality.

A Mr. Haunschild, of Klein-Sagewitz, says that a farmer of his place had 7 acres of phacelia; after the first cut of red clover had been fed, the phacelia was cut while the second week in bloom. The cows ate it with eagerness, and could hardly get enough. I think the above testimony ought to be sufficient to encourage all those to a trial who would like to have a bee-plant that might be grown in quantity to fill out a gap in the honey-flow while its value as feed (green or hay) would pay the farmer for his trouble and expense, apart from its value as a honey-yielding plant. Phacelia begins to bloom about six weeks after sowing, and care should be taken not to sow it too thick. J. A. HEBERLY.

Weisweil, Baden, Germany, Jan. 22.

A NEW HONEY-SHRUB.

I have watched GLEANINGS closely for bee-plants, as I believe that, if we ever make bee-keeping a success in Kansas, we shall have to assist them in every way possible; and one of the main ways is planting alsike clover, sowing catnip along hedges; sweet clover, etc., all of which I have been doing for a number of years. But last year, in purchasing a bill of shrubbery I included one blue spirea (*Caryopteris mostacanthus*), a new hardy plant, I think from Japan. It is a sturdy, upright grower, and is extremely floriferous, blooming profusely the latter part of the season until hard freezing weather. At the time I discovered the first bloom, it was covered with bees. I have never seen a plant that bees seemed so fond of. S. G. BRYANT.

Neosho Falls, Kansas.

WM. M'EVOY AS ARBITRATOR IN A CASE INVOLVING BEES AS A NUISANCE.

By careful and long pleading I am bringing certain neighbors around, and will get all things settled as nice as the flowers of May. The one party would not put up a board wall 12 feet high, and the other would not accept it if he did. I have this about settled, I believe, without arbitration or law. WM. MCEVOY.

Woodburn, Can., Mar. 14.

[I believe it was J. B. Hall, at one of the conventions in Ontario, who, referring in a facetious way to Wm. McEvoy and of the splendid way he had of getting along with people when sent out as an officer to enforce the law, said that he had "just enough Irish blarney" to make everybody feel good-natured; that his very face and manner were enough to disarm opposition; and before he got through, the people who were ready to show fight were unconsciously complying with his requests and *with the law*. Well, it appears this same man can use his Irish blarney to good account in settling troubles between a bee-keeper and his neighbor. The province of Ontario had better keep him as a paid official to settle rows of this kind out of court, for that is always the cheapest way.—ED.]

MOVING BEES SHORT DISTANCES.

I wish to move 125 colonies of bees about 20 rods to a better and more convenient location. Will you give me a point or two on keeping the bees from going back to the old stand? N. J. CRAWFORD.

Armada, Mich., Mar. 17.

[It is a difficult matter to move bees about twenty rods at this time of the year. If you had written during February I would have advised you to move them before they had a general flight. At that time the transposition could have been very easily effected without loss. You can move them now providing you move the whole apiary, keeping each hive and group of hives in the exact ratio that it stood before in the old location; but the whole apiary must be moved at once, or say toward night. The surroundings in the old location must be changed as much as possible; throw in brush, farming-implements, any thing that will fill up and make it look like any thing but the old spot. The bees would be likely to find their new location, but it may result in the loss of some of your queens in the general mix-up. —ED.]

A REMEDY FOR PEAR-BLIGHT.

I should like to have a few of those western pear-growers try a simple remedy for pear-blight, as I never saw it in print. It may be old to them, and no good; but here in Ohio I believe it will restore diseased pear-trees if taken in time. Cut out the diseased wood, and bury a few pieces of rusty scrap iron around the fibrous roots of the tree. I tried this on a Bartlett pear-

tree two years ago that was badly blighted. Last year it made a good growth, and no blight, and is looking finely.

ALBERT L. MARTIN.

Leonardsburg, O.

[The first part of your remedy is all right; but I have very little faith in the rest of it—the rusty scrap iron, etc. I never supposed the oxide of iron was a germicide. In the first place, the microbe of pear-blight does not reside in the roots of the trees but in the stems or blossoms. The pruning cure is the one recommended by Prof. Waite, spoken of in our April 1st issue, and is the only rational and scientific treatment so far known; but because it involves a great amount of labor, it may not be carried into effect in some localities. —ED.]

WHEN TO TRANSFER FROM BOX HIVES.

I have bought a lot of bees in box hives, with the intention of transferring; but as I am working for increase I should like to get a swarm from them before transferring (of course, I mean to feed in the fall if needed, for I use the Danz. hive). Would not from the 8th or 10th day after the issue of first swarm be about right to transfer? and would it not check after-swarming at same time? A. M. CHARRON.

St. Therese, Can.

[If you contemplate transferring from box hives some time between now and next summer, I would advise you to begin the work as early as practicable in the spring, when there will be little or no robbing, say in fruit-bloom. Do not allow those box hives to be filled up with honey, raising, perhaps, a lot of useless drones as consumers, when you can shut off this waste by transferring early in the spring. It will cost you a great deal less to transfer this spring. You can have your swarms just the same.—ED.]

PAINTING HIVES WITH BEES IN; FEEDING BEES CORN MEAL; KEEPING FOUNDATION IN WINTER.

1. Can you paint hives, after the bees have been put in them in the spring, without affecting the bees?

2. Is corn meal good for bees? When and how should it be fed, and what benefit is it to them?

3. Where is the best place to keep foundation in very cold weather?

MRS. JOHN O'BRIAN.

L'Original, Ont., Can.

[1. Yes, we paint our hives while the bees are in, every other season, or as often as the hives need it.

2. Corn meal can be fed as a pollen substitute early in the spring; but Nature usually supplies in most localities sufficient pollen for the needs of the bees. The corn meal is apt to overstimulate at the wrong season of the year. When Nature opens up her blossoms there will be time enough for the bees to begin brood-rearing. In some northern localities the first natural pollen comes from soft maple; in others it will be from willow.

3. It will do no particular harm to have the foundation in a room subject to freezing temperature if it is not stirred or jarred while it is cold. It would be advisable, however, to keep it in a room where it would not freeze, at least. If a truck or something heavy should bump into a box of foundation stored in a zero atmosphere, the sheets might be pretty badly shattered. —ED.]

RAISING CELLS FROM SELECTED STOCK IN UPPER STORIES.

Would the following plan for producing queen-cells be advisable for a honey-producer who wanted to produce a few good queens?

During the main honey-flow, put eggs or young brood from best queens between combs of sealed brood in upper story over a queen-excluder having a strong colony of bees with laying queen below.

FRANK TALBOT.

Plymouth, Ill., March 11.

[The plan might work some seasons of the year, and others it would not. The upper story can be used providing it is during the honey-flow or when the bees are fed lavishly with a little syrup every day to bring about a condition of high prosperity in the brood-nest. A surer plan—shorter at least for the beginner—would be to put a frame of selected eggs in a queenless and broodless colony, or having nothing but sealed brood. After the cells are *once started*, they can be completed in the upper story of a colony having a queen below.—ED.]

GIVING BROOD TO HOLD A NEW SWARM.

I noticed in GLEANINGS some time back an article condemning the practice of giving a new swarm a frame of brood; as this has always been a practice of mine, please give me *your* views in *next* issue of GLEANINGS. JUDSON HEARD.

Macon, Ga.

[It has been recommended, and it is our practice, to give every new swarm just hived a frame of unsealed larvæ. Sealed brood is better than nothing, but unsealed far better. There are times, however, when neither brood nor any thing else will hold the swarm; but as a rule larvæ have a tendency to make them contented.—ED.]

A CORRECTION.

I am sorry to note an error in my article in March issue, page 235. The little wooden jig, or anvil, is flat on top, not beveled forward as shown. In this form the end-bar would not stay in place of itself.

Syracuse, N. Y. C. B. THWING.

HIGH-PRESSURE GARDENING IN CUBA.

Most of the gardening in and around Havana is done by Chinamen, and the Chinese gardens look very pretty; even where they are located by a running stream that is on a higher level than their garden, they seem to have a preference for hand-watering. I believe most of their gardening is done by hand. Their beds for plants are, I judge, not more than four feet wide. The paths are very straight, their beds fine and level. Having the paths so near together is somewhat expensive, but it enables them to step over the bed from one path to another. As we ride through on the cars, these long narrow beds of different kinds of vegetables look like ribbons of various tints and colors. The Chinese have a way of serving up radishes on the table that I think might be copied in the States. They grow mostly the small round radishes. The tops are cut off so they will stand upright on a plate, the roots up in the air. Now, to make them attract attention they cut off the tap-root of the radish, then slit down through the red or pink skin so that this bright skin will roll over like the leaf of a rose. They have a way of making them look so exactly like a dinner-plate filled with beautiful roses that again and again I started with delight, and was just going to say, "What beautiful roses!" when I discovered they were *not* roses, but *radishes*. If prepared just before they are put on the table, the inside of the radish is a pearly white, like a rose with a white center. This contrast with the bright red or pink of the peel makes them wonderfully attractive, and almost everybody will want to get hold of one to see if it tastes as well as it looks. The Chinese seem to have rare skill—at least in Cuba—in making all sorts of vegetables look tempting. At the Chinese restaurants you get every thing at a much lower price than anywhere else; and as a rule it is served in very nice order; and you generally have a generous allowance of fancy vegetables and garden-stuff thrown in.

Down near Güines there are several miles of rich fertile land, so nearly level that it is irrigated by running the water in furrows as they do in the great West. Here many Americans are engaged in growing tomatoes, peppers, summer squashes, and a variety of garden stuff, which is shipped to Chicago, New York, and other northern cities. At the time I was there, they were shipping off carloads of what I should call green tomatoes. There was not a bit of red visible on them anywhere. They said they would be ripe by the time they reached their destination. One of the gardeners had just received word that his tomatoes brought in Chicago $3.50 a crate. Now, as this crate is less than a bushel he got a very good price and a very unusual one. But the commission man wrote him that the extra price was because his tomatoes were of good shape, all of a size, all perfect, and neatly packed. Mango peppers are grown by the acre. They are shipped green like the tomatoes. Summer squashes and other garden-stuff are in some demand; but I think the tomatoes stand pretty much at the head. Irish potatoes are grown a great deal, but they are troubled as they are in Bermuda, with blight. The tomato-growers find that spraying with a Bordeaux mixture and some other chemical is quite an important part of the work in the prevention of blight on tomatoes. The big tomato-worm troubles them a great deal; and I saw a man going along with a pair of sheep-shears cutting the worms in two. He said that was about the quickest and cheapest way to make a "sure thing" of them. I suggested a flock of turkeys, as described in our tomato-book, and I thought of Miss Emma Hochstein's 200 young turkeys. They did not seem to have caught on to the turkey business, however, for keeping down the tomato-worm. This same worm troubles the tobacco-grower. I did not mean to write up the tobacco industry, even if it is true that tobacco comes in second among the three great staples of Cuba. Didn't I tell you what these staples were? Well, they say sugar-cane comes in first; tobacco second, and honey third. I think the tobacco crop is the only one where they go to the trouble of hauling out stable manure from livery-stables in Havana. The tobacco crop is also almost the only one where *irrigation* is largely practiced. The water is, in many localities, hauled from deep wells. They have a bucket holding a barrel or more, and a mule or a yoke of oxen pulls it to the surface or a little higher, where it is dumped into a big tank, and iron pipes carry it from the tank to different parts of the tobacco-field. Some of the more enterprising growers have gasoline-engines to pump the water up, and small farmers carry water by hand out of the brooks.

I do not suppose that the growing of sugar-cane can be properly called high-pressure gardening; and yet there is a lot of money in it where it is managed on the high-pressure principle. It is said that a crop of sugar-cane may be grown on the same ground for a hundred years, without any manuring; and some go so far as to say it can be done without any cultivation; but it is not quite true. The most successful cane-fields near the great sugar-mills are managed so as to grow not more than ten or twelve crops on the same ground without some kind of rotation. It is true that the leaves stripped from the cane go a great way toward fertilizing the ground; but I think the crop is greatly benefited by plowing between the rows after the leaves have decayed somewhat. It is true, however, that, when the cane is cut off close to the ground, it very soon sprouts up again, and

in the course of time another crop is ready to cut. Very likely I am not very well posted in regard to the sugar-cane business. Perhaps some resident of Cuba will straighten me out. I know this: There is a vast difference in the amount of cane grown per acre. Where it does well they cut canes eight or ten feet long; and, by the way, if you never chewed a stalk of sugar-cane you have missed something. In Cuba, for months, you will see every man, woman, and child, out in the country looking for extra-large and long stalks of sugar-cane. With machete or a pocket knife the tough outside bark is peeled off; then they cut off the slices and chew out the juice. My good friend Somerford cut off a stalk as we were passing near a cane-field, and told me to try it. I suggested that it would make me sick.

"Sick? Not a bit of it. Sugar-cane never made *anybody* sick. It makes folks *well*."

So I took a piece and squeezed out the juice. I was astonished at the amount of juice as well as its inviting flavor. Why, it was not far behind maple sap when partly boiled down. I have seen it stated that the young colored people or colored babies, if you choose, grow fat and sleek as soon as they can have plenty of sugar-cane; and it sort o' seemed to me that day that I might grow sleek and fat too if I had nothing to do but to chew the delicious cane that was growing so rank and luxuriantly in that one field.

A few days after, one of the bee-friends took me to see one of the great sugar-mills. I should think there were thirty or forty, may be twice that number, of ox-teams loaded with sugar-cane standing around the mill. Many of the carts had three yoke of oxen on, and some four. Why, my good friend, a Cuban cart costs over $100. The wheels are immense in size; and they are made of harder wood than can be found outside of Cuba. Well, these great carts back up beside a moving platform that runs out into the yard. The cane is dumped on to this platform, or endless belt, which is all the while moving slowly up an incline into the works. A pair of monstrous iron or steel rollers chew up the cane roughly, sending out a small river of juice. Then another pair of rollers, almost smooth, squeeze out another small river of juice; and, to make a "sure thing" of it, a *third* pair gives the last and finishing "squeeze." After it passes out of these last rollers, another endless belt takes it into the furnace to feed the fire; so that no additional fuel is evern eeded, practically, for a sugar-mill. W ell, now, this juice is very good to drink, as I know by experience. It is considerably sweeter than maple sap. But the nicest drink, I might almost say the *very* nicest, I ever got hold of, was some of this same juice after it had been heated and clarified a little further on in the works. It was the exact temperature that I want my hot water. You know that I have to have a drink of hot water half way between breakfast and dinner, and again half way between dinner and supper. I think Dr. Salisbury said the proper temperature was about 110. Well, this hot cane juice was the right temperature to a dot, and I was particularly thirsty. I tell you it just hit the spot. Now, do not misunderstand me. I have said a good many times that the most delicious drink I ever found was pure hot water. The sugar-cane juice is nice for a change; but I guess that, for a steady "diet," the hot water would be a little the safer.

Well, if you think I am going to try to describe that sugar-mill with all its wonderful processes and complicated machinery, that make a modern sugar-mill cost from a quarter to half a million of dollars, you are mistaken. I would if I could; but there are hundreds of things about these immense establishments that I could not understand. The syrup is boiled in vacuum-pans; and when it has been cleansed, and passed through so many operations to get it pure and clean, it is boiled till it is just right to granulate. Then it is run into the centrifugal machines that work a great deal like a honey-extractor. In fact, this beautiful modern centrifugal sugar-machine *is* an extractor; but it extracts *sugar syrup* instead of honey, and does it much the same way. The can itself revolves; and it goes with such lightning speed that the sugar of its own accord levels up at a regular thickness all over the inside of the can. It keeps getting whiter and whiter as the machine continues to run; and finally, when every last bit of syrup is thrown out by the tremendous speed, the dry sugar is ready to shovel into bags.

I visited two different mills. The latter had just been remodeled so as to embody all up-to-date improvements. I was told this remodeling cost about $200,000. But the new apparatus was able to take 1½ per cent more sugar from cane than the old one did; and this 1½ per cent in three months had amounted to $20,000. Besides this, the new apparatus required less than half the number of men to take care of it; so they will soon get their money back for making the change.

There is something wonderful about the *fertility* of Cuban soil—perhaps I should say the *enduring* fertility. A great deal of the land, I have been told, has been growing crops for a hundred years or even more—some of it perhaps three centuries. No manure or fertilizer of any sort is ever used, with the exception of what I mentioned on the tobacco crop; and yet this soil produces sugar-cane and many tropical fruits right straight along. On most of the ground they grow very nice-looking crops of Indian corn. The color looks as good, almost, as it does in the best corn localities in Ohio, and a good deal of the time they do not cultivate it at all. They fit the ground, plant the corn, and in that tropical climate the corn shoots up and crowds out the weeds—at

least so I was told; and I also heard that three crops of corn can be grown, one after the other, in one year. Somebody told me this was *possible*, but that it was rarely done. They do not get the yield of corn per acre, however, that we do in the North; and I believe they grow only a peculiar kind of corn adapted to warm climates—something like the corn in Florida. A large part of the corn, however, is used to feed green—corn fodder, as we call it. This is drawn into the city in loads; and a single mule will carry on its back what often looks like a pretty good wagonload of corn fodder.

I have said already that oxen are the principal beasts of burden in Cuba. One reason is, there is always plenty of feed for oxen. When a man stops work he lets the oxen go out and pick grass; and if he gives them a nooning of two or three hours they do not require any thing else. In fact, they will not *eat* any thing else. Our good friend Hochstein was very anxious to teach his oxen to eat grain so they would not need such a long nooning. Somebody told me it had been his hobby for two or three years; but he had not got yet to where his oxen will eat dry corn, Indian meal, nor even wheat bran. They will eat corn fodder at any stage of growth; they will eat the ears of corn off the fodder when they are small and green; but just as soon as the corn began to be the least bit hard they would eat only stalks, and leave the corn. The Cuban oxen seem to have got it into their heads that dry corn is not made for *oxen* to eat. Somebody said the teeth of the Cuban oxen are different from those here in the North. As very little of the ground in Cuba is fenced at all, when a man wants to feed his oxen he simply lets them loose wherever he happens to be. His neighbor returns the compliment, and so on.

Every little while somebody undertakes to farm with northern tools and northern methods; but he always "gets left," so I am told. Of course, there is room for wonderful improvement in Cuban methods in many things; but after one works with them and by their side he will discover they are not so dull after all. I made a great fuss because they ground their corn meal a few handfuls at a time, just as they wanted it; but when we get a bag of corn meal in the good old style, as we have things in Ohio, we find there are insects in Cuba we had not figured on. A great many times the Cubans will try to explain to the Americans why it is that their new-fangled notions will not work; and I have seen Americans that laughed at the idea that a Cuban could teach them any thing. A great many times I have seen a look of pain on the face of the good-natured Cuban when his friendly suggestions were rudely ignored; but after a little more experience, and when I had discovered the Cuban was right and the American wrong, I began to think it would be better all around if we new comers would get down off from our high ideas of "superior learning," and sit at the feet of those who have spent their lives in that tropical land.

Now, friends, this talk is not altogther high-pressure gardening; but I have something to wind up with that I think will hit the spot. Mr. Fraser, the missionary, went with me to see that improved sugar-mill near Mariel. Our path took us through one of the most beautiful and fertile valleys in Cuba. The calzada runs down a long hill into the valley and up on the other side, clear up over the spur of the mountains; and, by the way, some of the finest fields of sugar-cane I ever saw are over these great hills. Well, right where the calzada runs over about the highest point, we found a little nursery for orange-trees, belonging to Mr. Thos. R. Towne, of Quiebra Hacha. It was just wonderful to see the rank luxuriance with which those young orange-trees grew, right on the highest point. Of course, they were budded trees, and after the bud is set the tree is cut partly off and tipped over just above the bud. This throws the growth into the new bud that has just been set; and in just a few months these buds had developed and shot up canes or shoots higher than one's head. I think I found there the finest growth of young orange-trees I ever saw. Bro. Fraser urged that we had to get back to meet the train, and that we could not very well stay any longer. Mr. T. replied, "Oh! but look here: there is something yet you have *got* to see;" and over on the northern slope he showed us rows of beds containing orange-seedlings just about as regular and handsome-looking as any thing could be. I said, "Look here, Bro. T., I have written a book, or a part of a book, on 'How to Support a family on a Quarter of an Acre.' Now, if I am not mistaken we have got a pretty good demonstration right before our eyes. Will you please tell me what these thousands of young orange-seedlings are probably worth?" Now, I can not remember exactly, but I think he said he would not want to take less than $2000 for what was growing on that little plot. There was a perfect stand; the ground was clean; every particle of it was stirred in the most approved way, and the little seedlings had nothing to do but to *grow*.

Down at the foot of the slope, in the corner of the field, several men were at work at something in a lot of barrels. "Friend T., what are those men doing down there?"

"Why, they are taking the seeds out of the native sour oranges to plant in beds to grow more orange-trees."

I asked the price of one of the nicest little trees, about as high as my head, and one that was already budded to bear fruit. The reply was, "Well, that is one of the latest improved thornless (as you see), and *seed*-less oranges." He gave me the name, but I have forgotten it. You see, they have not only got so they can grow orange-trees without *thorns*, but they grow them without *seeds* by the budding process. I think such a tree is worth about a dollar; but ordi-

nary trees, ready to set out, of the latest and best sorts, run from 30 to 40 cents. Let us now change the subject a little, if you please.

My friend, did you ever see a time when it was worth a dollar to be permitted to look at some beautiful sight for just a *quarter of a second?* I remember one such experience. On my return from Cuba I got on an electric car at Cleveland to go home. It was just about sundown, on Saturday night, and I was very anxious to get home that night. Out in the west part of Cleveland there is a sort of market right alongside the street-car line. This market seems to be in full blast Saturday evening—at least it was that evening. Of course, I was looking for fruits and vegetables on sale about the first of March. The car was running swiftly; but all at once my eye caught a glimpse of something on the broad sidewalk that almost made me shout in admiration. I do not think my eye rested on it more than a quarter of a second, but it thrilled every fiber of my being. Shall I tell you what I saw? First there was a group of azaleas—perhaps a dozen. They were in five or six inch pots, and set in squares, say 3×4, may be a foot apart. There was just room enough between the plants so the spherical mass of bloom that covered each pot did not quite touch its neighbor. There were different colors, all looking their very best. Next was a similar show of cinerarias. By the way, there is a startling brilliancy in a pot of cinerarias that wakes up a love for flowers as almost nothing else can do. Last, there was a similar show of primulas, every plant a perfect mass of bloom, and all three —azaleas, cinerarias, and primulas—were all shades of color. I should guess that such azaleas might bring from 75 cents to $1.00 each; cinerarias perhaps from 30 to 40 cents each; primulas from 15 to 20. There was a crowd on the street looking at them; and it was a wonder to me that every man, woman, and child did not grab for one of those beautiful plants and lug one home to beautify their own domicil. I did not say it out loud, but I kept thinking to myself, "Oh, I want a beautiful little up-to-date greenhouse, and I want to grow such plants as those. I would rather do it than any thing else in the world." But Mrs. Root would tell me, and my own conscience would tell me, that it would require days and perhaps nights of careful watching and attention to make a real success of such things; and I rather think just now at this time of life God calls me elsewhere. But I am glad, dear reader, that it is my privilege to give you this glimpse of the possibilities that lie in the way of supporting a family on a quarter of an acre, or, if you choose, *high pressure-gardening.*

THE STATE OF MAINE AS A HEALTH RESORT; FREAKS OF ONIONS.

Mr. A. I. Root:—I am about your age; and as we jewelers say, "Borax Brothers." I carried on business as a manufacturing jeweler at 95 Fifth Av., New York, for some 25 years. I have lived here some 15 years and can say I like Maine almost as well as you seem to the cabin in the woods. Yes, I read GLEANINGS (after I read your interesting talks and experiences). I have just finished your manly *expose* of the Giant Gibraltar onion. I had some experience a few years ago with onions. I had sent me a barrel of onions from New York for home consumption. They were nice, but medium in size. Not needing so many for use we planted part of them; and such a crop one seldom sees. They grew larger than the onion planted, and from 4 to 10 to each onion planted, all in a cluster. I saved a good supply of these and planted them the following year, thinking to get a fine crop. Well, I had all "scullions" as you call them. Being interested, and also disappointed at such doings of Dame Nature, I proceeded to investigate. I found the original onions sent me came from Egypt, and were evidently grown direct from seed. This seems to be an onion trail (such as produce cluster onions). You first plant the seed, and then, planting *these* onions, they produce the clusters and your large crop. Planting the onions from the clusters only, produces the big-neck top (seed), and no bottom. An old Maine farmer told me this had always been his experience.

You are correct about county fairs. I always visited *all* the fairs about New York, solely to see the machinery, etc. I often get an invoice of tools, goods, etc., as the storekeepers here charge the Dutchman's "one per cent." I approve of fewer small dealers, larger sales, and not such exorbitant prices by the retailer. I sell such potato-hoes as you tell about (and not known here, as you have told), for 40c each. You say 55 cts.

We have five orchards on our farms here. The one on our home farm yielded several thousand bushels of apples this year. The fruit was the finest, and of many choice varieties; but for all that we made no sales—no home market, and barrels to ship such a crop are out of the question, with freight added. The situation may improve in the near future. We feed about half a barrel of apples to our poultry daily, and they can eat a nice Seek No Further, Northern Spy, Maine Baldwin Famouse, etc., such as I see on sale in New York at 2, 3 and 4 cents each.

North Hancock, Maine. L. P. AUSTIN.

Friend A., the onions you mention were, without question, the York State potato onions. Our five-cent onion pamphlet, now in press, describes this onion fully; but I am puzzled to hear you tell about its going to seed. The potato onions we have worked with never sent up seed-stalks at all. I believe, however, an onion we call *shallots* sends up a seed-stalk bearing black seeds. If these are planted they produce onions that multiply like multipliers of potato onions. Now, we did not try growing them from the seed; but our shallots, after three years, got so they sent up seed-stalks, and were no good. Your hint might help us out in the matter. By the way, the freaks and queer things about the onion-plant would fill a book. I have thought several times about writing it up, but I concluded to wait until I knew a little more; but the more I look into the matter and talk with others, the more I am impressed with the fact that there is a great deal yet that nobody knows—I mean about this matter of sporting, and exhibiting new traits and peculiarities.

If you can sell a potato-hook with tapering tempered tines for 40 cents you ought to do a big business among potato-growers, I should think.

In regard to the apples, is it not possible you are so situated you could barrel them up and send them to the large cities, where they bring two or three cents each? Thanks for your suggestions.

L. Stachelhausen,

whose picture appears alongside, has an article in the BEE-KEEPERS' REVIEW for April, telling how to prevent both natural swarming and increase, yet get the best results in comb-honey production. It is a modification of, or addition to, slowly swarming, wherein the young bees, as they hatch in the old colony, are transferred to the shook swarm on the old stand, thus keeping that booming and piling up the comb honey.

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W. Z. Hutchinson, Flint, Michigan.

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